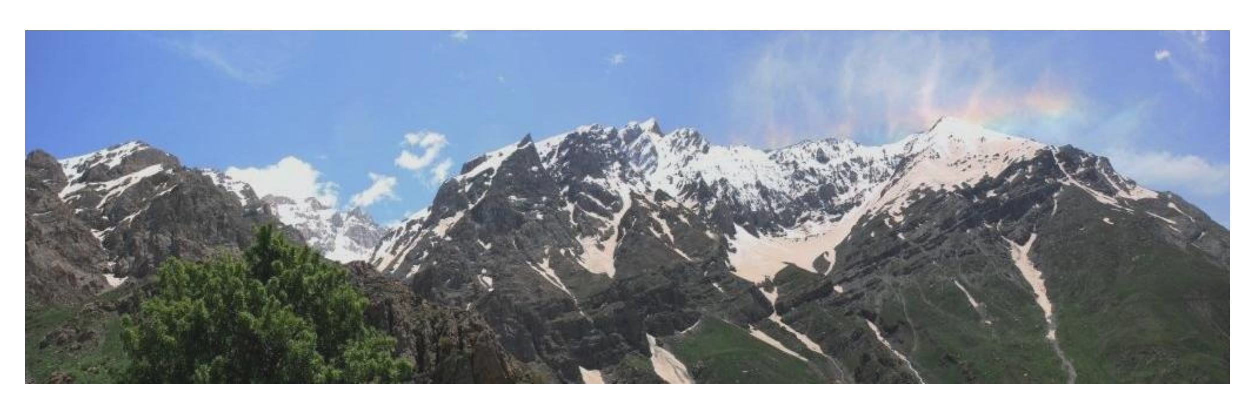




Key Biodiversity Survey of Iraq

2010 Site Review







Nature Iraq & the Iraq Ministry of Environment
Sulaimani, Kurdistan, Iraq

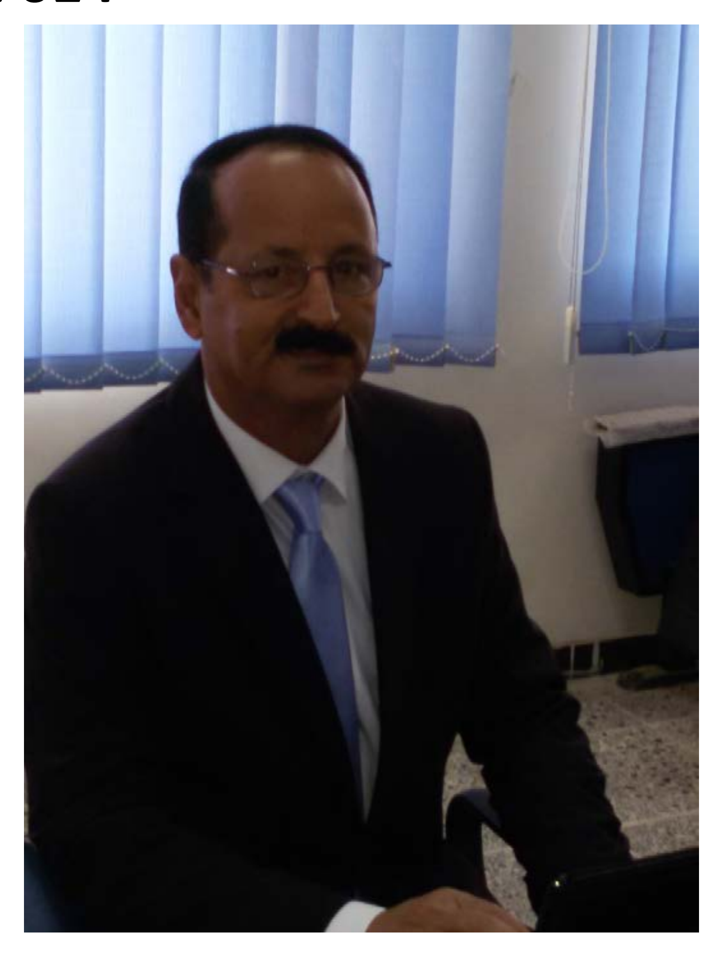
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This report has been prepared in order to summarize and inform partner agencies on the status and progress of the biodiversity initiatives of Nature Iraq and the Iraq Ministry of Environment. For more information please refer to:

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Key Biodiversity Survey of Iraq

2010 Site Review

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Richard Porter reviewed the bird data and together with Anthony Miller and Matt Hall, took part in the spring/summer KBA trainings, which greatly informed the work of the field teams.

The project has been conducted in cooperation with the Iraqi Ministry of Environment with generous support provided by the Italian Ministry of Environment, Land and Sea.

KBA Teams

The Key Biodiversity Areas (KBA) teams for winter and summer 2009 consisted primarily of staff from Nature Iraq (NI), the Iraqi Ministry of Environment (IMoE), and the Kurdistan Commission of Environment (KCoE)

Kurdistan, Norhtern Iraq Team:

Birds: Korsh Ararat (NI) and Mariwan Qadir (KCoE Trainee)

Mammals and other Fauna: Hana Ahmed (NI)

Vascular plants/Macrophytes: Saman Abdul Rahman (NI) and Nabeel Abdulhassan (NI)

Central/Western Iraq Team:

Birds and other fauna: Omar FadhilAbdulrahman (NI), Mohammed FadhilAbd (IMoE), and Ali Ne'emaSalman (IMoE)

Southern Iraq Team:

Birds and other fauna: Mudhafar A. Salim(NI), Laith A. Al-Ubeidi (NI), Mohammed Turki (Trainee), Kadhum Jawad (Trainee), Zaman Salman (Trainee).

Vascular plants/Macrophytes: Nabeel Abdulhasan (NI), Saman Abdul Rahman (NI), Bestoon (Trainee), Bahaa Ahmed (Trainee), and Muataz Talib (Trainee).

Additional support was provided by:

In Anbar province:

Haithem Nafe'e Asad –Natural Ecosystems Division -Anbar Environmental Directorate
Dheaa Mahmmod Al Mandalawi –Biodiversity Division - Anbar Environmental Directorate.

Qais Najih Abid - Anbar Environmental Directorate

Mustafa Saeed - Anbar Environmental Directorate.

Ahmad Kamel -Anbar Environmental Directorate.

In Salah Ad Din province:

Samer Abd Al Razak– Environmental Directorate in Northern Region – Tikrit Office.
Hassan Ahmad - Environmental Directorate in Northern Region –Tikrit Office.

Ayad Mohammad - Environmental Directorate in Northern Region –Tikrit Office.

In Diyala province:

Ahmad Nafe'e Abass - Diyala Environmental Directorate.
Mahmood Ali - Diyala Environmental Directorate.

In addition, local partners have assisted the project logistically and with information about the survey sites. These have included the many Iraqi police officers and policemen, PeshMerga, environmental and forestry police, guards, guides, falconers, hunters, drivers, and wildlife rangers (especially at Al Massad Reserve) with whom the team has worked. We wish to include them in our thanks.

Introduction

This document presents seasonal observations from the Key Biodiversity Areas (KBA) Survey Project conducted in 2010at selected sites throughout Iraq in the governorates of: Sulaimani, Erbil, Dohuk, Salahadin, Diyala, Anbar, Kirkuk, Baghdad, Missan, ThiQar, Basrah, Muthanna, and Qadissiya, Najaf, Muthanna, Karbala, Wasit, and Babil. This survey is a joint effort of Nature Iraq (NI), the Iraqi Ministry of Environment (IMoE),and other partners including the Kurdish Commission on Environment (KCoE), environmental directorate offices in Anbar, Salahadin, Diyala and other locations, the Kurdistan Regional Government's Environmental Police (a division of the PeshMerga),andthe Universities of Sulaimani and Baghdad. The following table lists the winter andsummer 2010 survey periods for each area.

Table 1: Survey periods for 2010 KBA Project

	Kurdistan		Central Iraq		South	
	Winter	Summer	Winter	Summer	Winter	Summer
Birds	12 Jan – 3 Feb	18 Apr – 4 Jun	19 Dec –12 Jan	19 Dec –12 Jan	16 Jan – 21 Feb 2010	7 May – 30 June 2010
Mammals & other fauna	12 Jan – 3 Feb (primarily Anacdotal)	18 Apr – 4 Jun (primarily Anacdotal)	19 Dec –12 Jan (primarily Anacdotal)	19 Dec –12 Jan (primarily Anacdotal)	16 Jan – 21 Feb 2010 (primarily Anacdotal)	7 May – 30 June 2010 (primarily Anacdotal)
Flora	None	18 Apr – 4 Jun	None	None	None	15 Mar - 9 Apr (Spring Survey)

The 2010 KBA surveys represent the 7th and 8th seasonal surveys conducted in Kurdistan, northern Iraq, since the start of the project there in February 2007. They represent the 3rd and 4th seasonal surveys for central and western Iraq since the project was initiatied there in January 2009, and they represent the 11th and 12th seasonal surveys for many of the southern sites since the start of fieldwork in the Mesopotamian Marshland areas in the winter of 2005. The field effort in 2010 focused on birds, mammals and plants. This report provides an overview of the basic findings on each site, a determination of whether the site meets KBA criteria (described below), as well as a threat assessment for the sites, a refinement of delineations for priority sites and recommendations for sites.

Key Biodiversity Areas Criteria Assessment

Key Biodiversity Areas (KBA) are those sites that are large enough, or sufficiently interconnected, to support viable populations of species to which they are important. The KBA selection process uses two main criteria of "Vulnerability" and "Irreplacability". These are

further defined into sub-criteria and thresholds used to determine KBA Status for sites in which site-scale conservation is appropriate. These are shown in the table below:

Table 2: KBA Criteria and thresholds (IUCN, 2007)

Criterion	Sub-criteria	Provisional threshold for triggering KBA Status
V. Vulnerablity Regular occurrence of a globally threatened species (according to the IUCN Red List) at the site		Presence of Critically Endangered (CR) and Endangered (EN) species – presence of a single individual or Vulnerable species (VU) – 30 individuals or 10 pairs[1]
I. Irreplaceability Site holds X% of a species' global population at any stage of the species' lifecycle	Ia) Restricted-range species.	Species with a global range less than 50,000 km^2 or 5% of global population at site
	Ib) Species with large but clumped distribution.	5% of global population at site
	Ic) Globally significant congregations.	1% of global population seasonally at the site
	Id) Globally significant source populations.	Site is responsible for maintaining 1% of global population
	Ie) Bioregonally- restriced assemblages	To be defined

If a site meets one or more of these criteria, the site would be considered as an area of Key Biological Diversity. Within the KBA framework a variety of criteria-based systems focused on specific fauna and flora groups are also applied.

Important Bird Area Criteria Assessment

BirdLife International, an organization devoted to conservation of bird species throughout the globe, has developed criteria for the designation of Important Bird Areas (IBAs). Under BirdLife International, Mike Evans (1994) published a book titled *Important Bird Areas of the Middle East* that listed 42 IBAs in Iraq. The IBA criteria (BirdLife, 2010) used for defining these areas consists of the following:

A1. Globally threatened species. Criterion: The site is known or thought regularly to hold significant numbers of a globally threatened species, or other species of global conservation concern[1].

A2. Restricted-range species. Criterion: The site is known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).

[1] Based on IUCN Red-List Assessments of species

A3. Biome-restricted species. Criterion: The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome.

A4. Congregations. Criteria:A site may qualify on any one or more of the four criteria listed below:

i). Site known or thought to hold, on a regular basis, ^{3} 1% of a biogeographic population of a congregatorywaterbird species.

ii). Site known or thought to hold, on a regular basis, 1% of the global population of a congregatory seabird or terrestrial species.

iii). Site known or thought to hold, on a regular basis, ^{3} 20,000 waterbirds or ^{3} 10,000 pairs of seabirds of one or more species.

iv). Site known or thought to exceed thresholds set for migratory species at bottleneck sites.

As the Nature Iraq KBA program has developed a strong ornithological section and focused all surveys on birds as major indicator species, the application of the IBA criteria to the survey sites has been the most straightforward and comprehensive.

Important Plant Area Criteria Assessment

In addition,Plantlife International, an organization involved in international plant conservation measures, has developed criteria for the designation of Important Plant Areas (IPAs) throughout the globe (like IBAs, these are also a subset of KBAs). According to the Plantlife International's website, the criteria for the IPA project have been developed over a period of ten years by a process of consultation involving specialists from many countries (Plantlife, 2008).

Plantlife states that the identification of IPAs is based on three broad criteria listed below. Again, as with KBAs and IBAs, a site qualifies as an IPA if it fulfills one or more of these criteria:

1. Sites with threatened species (sites that hold significant populations of species of global or regional concern)
2. Sites of botanical richness (sites with exceptionally rich flora in a regional context in relation to its biogeographic zone)
3. Sites with threatened habitats (sites that are outstanding examples of a habitat type of global or regional importance)

In terms of plants, Iraq is only in the initial stages of assessing sites based on these three criteria. Unlike lists for bird life and other species, comprehensive plant lists for species in Iraq do not yet exist; information on threatened plant species (the first IPA Critiera) is incomplete. However, the KBA project has collected extensive botanical information and the botany work has also aided the project in terms of developing a broader understanding of species/habitat relationships.

As stated above, a number of different organizations and fields of research have developed their own sets of criteria. In addition to the Important Bird Areas (IBAs) and Important Plant Areas (IPAs) discussed above, there is also a criteria system set up by the Alliance for Zero Extinction

(AZE). Essentially all these criteria systems come under the umbrella of Key Biodiversity Areas (KBAs). Therefore, if a site meets IPA or IBA criteria, it can be considered a KBA site as shown in the diagram below:

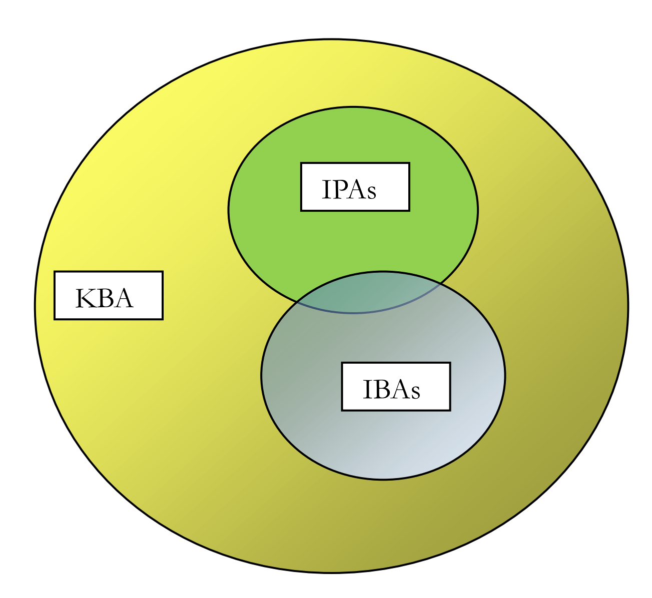


Figure 1: Key Biodiversity Area Site and their relationship to important bird and plant sites (IBA/IPA)

Important Note: For all sites in the following site reviews, a table of provided presenting evidence on the conservation significance of the site based on a review of the species and habitats present at each site and the specific KBA, IBA or IPA criteria that their presence allows the site to meet. These assessments are preliminary and based on only one year of data. Ideally, this assessment process is more rigorous and includes data from additional surveys. A more indepth analysis of the sites based on all data collected since the inception of the program is currently underway with plans to publish a paper on the KBAs of Iraq by the end of the year.

Survey Area

Iraq is part of the Palearctic Realm, the largest of the eight terrestrial ecozones that have been defined for the Earth. It includes the ecoregions covering Europe, northern Africa, the northern and central Arabian Peninsula and Asia north of the Himalaya foothills. Under the World Wildlife Fund (WWF, 2006) an ecosystem classification system of 26 biomes or major habitat types was developed from which 867 terrestrial ecoregions were defined.

Under the WWF system, there are 5 terrestrial biomes found in the Palearctic realm of Iraq:

1. Temperate Broadleaf and Mixed Forests
2. Temperate Grasslands, Savannas, and Shrublands
3. Flooded Grasslands and Savannas

4. Mediterranean Forests, Woodlands, and Scrub
5. Deserts and Xeric Shrublands

According to the World Wildlife Fund (2006), an ecoregion is defined as a large area of land or water that contains a geographically distinct assemblage of natural communities that:

- share a large majority of their species and ecological dynamics;
- share similar environmental conditions, and;
- interact ecologically in ways that are critical for their long-term persistence.

Iraq is made up of ten different terrestrial ecoregions, listed with their code, total area, and area within Iraq below (also see the map below):

Table 3: Ecoregions found in Iraq (WWF, 2006)

Ecoregion	Ecoregion Code	Conservation Status	Total Area (ha)	Area in Iraq (ha)
1. Eastern Anatolian montane steppe	PA0805	Critical	16820000	3
2. Tigris-Euphrates alluvial salt marsh	PA0906	Critical	3560000	3017501
3. Arabian Desert and East Sahero-Arabian Xeric Shrublands	PA1303	Critical	185130000	19399482
4. Mesopotamian Shrub Desert	PA1320	Vulnerable	21100000	12990700
5. Middle East Steppe	PA0812	Vulnerable	13230000	3791260
6. Zagros Mountains Forest Steppe	PA0446	Critical	39780000	3047020
7. Eastern Mediterranean conifer-sclerophyllous-broadleaf forest	PA1207	Critical	14380000	121204
8. Red Sea Nubo-Sindian Tropical Desert and Semi-Desert	PA1325	Critical	65130000	518925
9. South Iran Nubo-Sindian desert and semi-desert	PA1328	Critical	35150000	855179
10. Persian Gulf desert and semi-desert	PA1323	Critical	7260000	111335

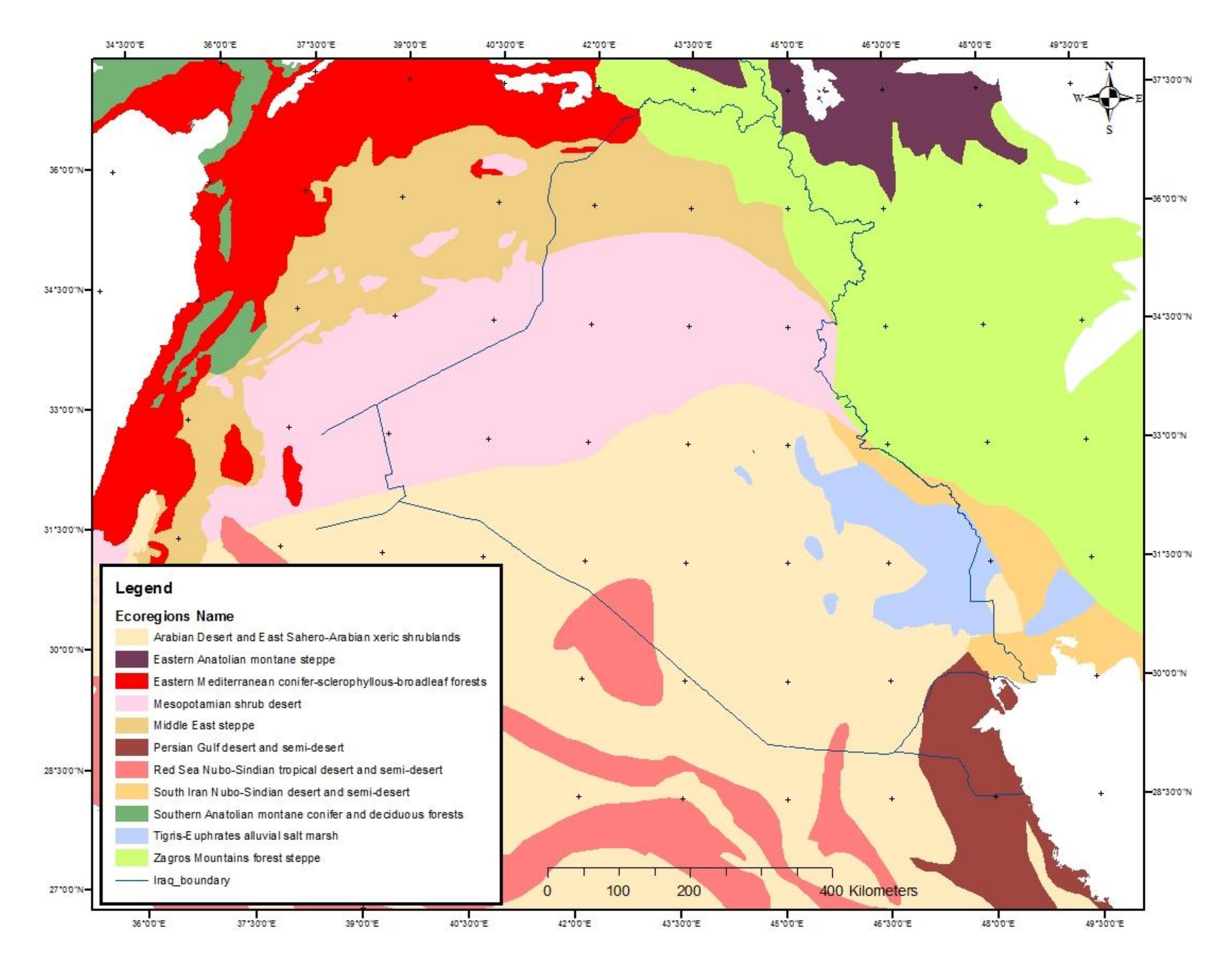


Plate 1: Major Iraqi Ecoregions

In addition, freshwater and marine "ecoregions" of the world were also defined, including three different freshwater ecoregions (Arabian Interior (440), Lower Tigris and Euphrates (441), Upper Tigris and Euphrates (442)) and one marine ecoregion (Arabian/Persian Gulf (90)), a part of the Western Indo-Pacific Realm.

The table below presents that list of sites visited in the 2010 survey and below it is a jurisdictional map showing the survey points throughout the country.

Table 4: Key Biodiversity Area Project Survey Sites in 2010

	Governate	Site Name	Site Code	Season of Visit W, Spr, S*	GPS Coordinates						Elevation (meters)
					Latitude (North)			Longitude (East)			
					°	′	″	°	′	″	
	Kurdistan, Northern Iraq Sites										
1.	Dohuk	Mosul lake	D10	W, S	36	44	28	42	47	10	310
2.	Dohuk	Fishkhaboor	D11	W	37	06	43	42	22	60	348
3.	Dohuk	Dure	D16	S	37	13	45	43	28	46	1543
4.	Dohuk	Chamanke	D18	S	36	25	08	43	44	39	916
5.	Dohuk	Ser Amadia	D2A	S	37	02	34	43	32	03	1123
6.	Dohuk	Garagu	D5	S	37	01	51	43	23	34	1028
7.	Erbil	Haji Omran Mountain	E1	S	36	40	01	45	03	00	1893

	Governate	Site Name	Site Code	Season of Visit W, Spr, S*	GPS Coordinates						Elevation (meters)
					Latitude (North)			Longitude (East)			
					°	′	″	°	′	″	
8.	Erbil	Bahraka	E11	W	36	27	13	43	48	37	297
9.	Erbil	Sakran Mt-Choman Reserve	E14	S	36	35	26	44	59	10	1872
10.	Erbil	Bradost Mountain	E18	S	36	42	07	44	22	54	1345
11.	Erbil	AltunKopri	E3	W	35	42	57	44	07	10	256
12.	Erbil	Doli (Valley) Smaquly	E5A	S	36	21	49	44	19	22	1184
13.	Erbil	Barzan	E8	W, S	36	56	37	44	11	44	530
14.	Sulaimani	Darbandikhan Lake and Surrounded Area	S1	W	35	08	41	45	45	18	578
15.	Sulaimani	Chami Razan	S10	S	35	48	33	45	01	14	648
16.	Sulaimani	Qara Dagh	S11	S	35	19	52	45	17	25	910
17.	Sulaimani	Dukan Lake and Surrounding Area	S2	W, S	36	05	33	44	56	09	485
18.	Sulaimani	Maidan Area	S22	W	34	39	21	45	40	49	508
19.	Sulaimani	De Lezha	S23	S	35	27	37	45	11	40	683
20.	Sulaimani	Homer Qawm and Shadala Valley	S24	S	35	47	06	45	15	09	1306
21.	Sulaimani	Parazan	S26	S	35	37	37	45	44	19	1047
22.	Sulaimani	Qadr Karam	S30	W	35	13	43	45	14	27	914
23.	Sulaimani	Assos Mountain	S32A & B	W, S	36	03	56	45	15	00	848
24.	Sulaimani	Gmo Mountain	S33	S	35	54	46	45	33	01	2164
25.	Sulaimani	Hazarmerd	S34	S	35	29	51	45	18	42	1035
26.	Sulaimani	Ahmed Awa	S4A	S	35	17	59	46	04	41	900
27.	Sulaimani	Awesar	S4B	S	35	12	45	46	07	56	1660
28.	Sulaimani	Peramagroon	S6	S	35	48	33	45	01	14	2613
29.	Sulaimani	Sargalu	S7	S	35	52	31	45	09	55	953
Central Iraq Sites											
1.	Anbar	Habbaniya Lake	AN1	W,S	33	11	48	43	27	38	35
2.	Anbar	Rahaliya and Razaza Lake	AN10	W, S	32	46	26	43	27	6	37
3.	Anbar	Sabkhat Albu Garis	AN11	W, S	34	41	54	41	13	9	42
4.	Anbar	Rutba and Al Massad Gazelles Reserve	AN12	S	32	54	29.8	40	13	14.22	43
5.	Anbar	Haditha Wetlands & Baghdadi	AN2	W,S	33	54	21	42	31	58	65
6.	Anbar	Anah & Rawa	AN3	W,S	34	28	31	41	53	2	42
7.	Anbar	Anah & Rawa	AN3	W,S	34	28	31	41	53	2	42
8.	Anbar	Al Nekheab District Oases - Al Hussayniyah	AN4	S	33	25	9	41	1	17	453
9.	Anbar	Gasr Muhaiwir	AN6	W, S	33	32	37	41	0	14	42
10.	Anbar	Qadissiya or Haditha Dam	AN7	W, S	34	20	87	42	3	84	18

	Governate	Site Name	Site Code	Season of Visit W, Spr, S*	GPS Coordinates						Elevation (meters)
					Latitude (North)			Longitude (East)			
					°	′	″	°	′	″	
11.	Anbar	Hawijat Albu Dheab and Al Ramadi Marshes	AN8	W, S	33	28	31	43	16	5	42
12.	Anbar	Tharthar Lake, Western Edge	AN9	W, S	33	41	56	43	18	17	40
13.	Baghdad	Jadriyah and Umm Al Khanazeer Island	BG1	W, S	33	16	31	44	22	36	64
14.	Diyala	Himreen lake	DY1	W, S	34	11	35	45	0	11	42
15.	Diyala	Attariya Plains	DY3	W, S	33	31	41	44	45	47	12
16.	Diyala	Mandli	DY4	S	34	4	6	45	27	38	27
17.	Kirkuk	Huweija Marshes & Beagi	KK1	W, S	34	58	36	44	0	8	154
18.	Salah Ad Din	Samarra dam & Wetlands	SD1	W, S	34	11	33	43	50	68	45
19.	Salah Ad Din	Tharthaar Lake & Dhebaeji Field	SD2	W, S	34	17	2	43	10	59	38
20.	Salah Ad Din	Mahzam	SD3	W, S	34	50	56	43	39	14	89
21.	Salah Ad Din	Abu Dalaf & Shari Depression	SD4	W, S	34	21	32	43	51	27	123
22.	Salah Ad Din	Jallet Albu Ageel	SD5	W, S	34	37	48	43	47	57	98
Southern Iraq Sites											
1.	Basrah	JabalSenam	BR1	W,Spr,S	30	7	28	47	37	38	
2.	Basrah	Kteibaan	BR2	W,S	30	42	30	48	1	38	
3.	Basrah	Kharanij	BR3	W	29	24	8	46	32	57	
4.	Basrah	Lehais	BR4	Spr	30	36	21	46	31	45	
5.	ThiQar	Baghdadiya, South	CM1	W,Spr,S	31	1	28	47	0	57	
6.	ThiQar	Fuhood, North	CM10	W	30	59	10	46	43	32	
7.	ThiQar	Abu Zirig	CM16	W,Spr,S	31	8	57	46	37	16	
8.	ThiQar	Zichri	CM5	W	31	3	19	47	13	19	
9.	ThiQar	Teena, Northern	HA1	W	30	53	19	46	54	24	
10.	ThiQar	Naggaara	HA16	W,Spr,S	30	41	15	47	36	6	
11.	ThiQar	Shilaychiya Marsh	HA17	W,Spr,S	30	37	32	47	37	32	
12.	ThiQar	Haffaar Opening 2	HA19	W	30	56	10	46	58	13	
13.	Basrah	Slein (south Rumaila)	HA21	W,Spr,S	30	41	17	47	28	16	
14.	ThiQar	Abu Hedeeda	HA22	W,S	30	48	10	46	48	49	
15.	ThiQar	Abu-'Ajaj	HA23	W,S	30	52	18	46	48	11	
16.	ThiQar	Nuwashi	HA24	W,S	30	51	36	46	27	12	
17.	ThiQar	Al-Rashid Lake	HA25	W,Spr,S	30	40	58	46	37	52	
18.	Basrah	Shaafi	HA26	W,S	30	49	32	47	26	48	
19.	ThiQar	Abu-Ajaj, East	HA27	Spr	30	50	7	46	52	48	
20.	ThiQar	Ghabishiya	HA28	Spr	30	40	41	46	53	3	

	Governate	Site Name	Site Code	Season of Visit W, Spr, S*	GPS Coordinates						Elevation (meters)
					Latitude (North)			Longitude (East)			
					°	′	″	°	′	″	
21.	ThiQar	Buhaira Al Hilwa	HA3	Spr	30	46	54	47	3	1	
22.	ThiQar	Umm At-Tiyaar near Al Buhaira	HA4	W,S	30	53	59	46	51	59	
23.	ThiQar	Umm Nakhla	HA6	W,S	30	49	16	46	38	32	
24.	ThiQar	Kermashiya Marsh	HA8	W,Spr, S	30	47	56	46	37	25	
25.	Missan	Umm An Ni'aaj	HZ1	W,Spr,S	31	35	35	47	34	56	
26.	Missan	Udhaim	HZ2	W,Spr,S	31	41	13	47	44	56	
27.	Missan	E'jayrda	HZ4	W,S	31	19	55	47	37	51	
28.	Basrah	Majnoon	HZ8	W,Spr,S	31	5	41	47	34	38	
29.	Missan	Bushes near Umm Al-Warid	HZ9	Spr	31	34	5	47	30	4	
30.	Karbala	Al-Taar	KR1	Spr	32	28	55.6	43	44	12.9	
31.	Karbala	'Ein Al-Tamr	KR2	Spr	32	32	57.6	43	30	11.7	
32.	Basrah	KhorAzZubayr Canal-100 meters east	KZ3	W,S	30	5	27	47	57	13	
33.	Basrah	Khor Az Zubary	KZ4	Spr	30	2	30	47	57	51	
34.	Basrah	Khawr Al-Zubair, west	KZ5	W,S	30	18	25	47	49	25	
35.	Basrah	Umm Qasr Port	KZ6	Spr	30	3	44	47	56	23	
36.	Qadissiya	Dalmaj Marsh, South	ME10	W,Spr,S	32	7	30	45	27	7	
37.	Wasit	Dalmaj Marsh, East	ME11	W,S	32	10	27	35	38	37	
38.	Qadissiya	Dalmaj Marsh, North	ME12	W,S	32	21	27	45	15	32	
39.	Qadissiya	Basroogiya	ME13	Spr	31	55	8.5	45	35	34.7	
40.	Najaf	IbnNajm	ME4	W,S	32	8	57	44	38	31	
41.	Karbala	Razzaza Lake	ME5	W,Spr,S	32	33	9	43	53	57	
42.	Babil	Hindiya Barrage	ME7	W,S	32	44	2	44	15	50	
43.	Babil	North IbnNajm	ME8	W	32	18	55	44	24	25	
44.	Missan	Teeb oasis	MN1	W,Spr,S	32	23	19	47	20	30	
45.	Missan	Zubaidaat	MN2	W,Spr,S	32	23	40	47	23	27	
46.	Muthanna	Sawa Lake	MT1	W,Spr,S	31	18	50	45	0	13	
47.	Muthanna	Salman	MT3	Spr	30	25	12	44	24	57	
48.	Najaf	Wadi Al-W'eir	NJ1	W,Spr,S	31	41	2	44	17	33	
49.	Najaf	Sh'eeb Abu-Talha	NJ2	W,S	31	4	35	44	1	19	
50.	Basrah	Euphrates & Tigris Junction	SA1	W,Spr	30	34	59	47	46	18	
51.	Basrah	Ras Al-Beesha (Fao)	SA4	W,Spr,S	29	55	44	48	36	9	
52.	Missan	Sinnaaf Area, Western	SM5	W, S	31	52	51	47	12	56	
53.	Wasit	Shuweicha Marsh	SM7	W,S	32	42	33	45	48	32	
54.	Missan	Teeb	SM8	W,Spr,S	32	1	22	47	24	12	
55.	Thi Qar	Suwaibaat, South	TQ1	W,Spr,S	30	28	22	45	57	59	
56.	Thi Qar	Tell Al-Laham	TQ2	Spr	30	43	39	46	23	26.6	

	Governate	Site Name	Site Code	Season of Visit W, Spr, S*	GPS Coordinates						Elevation (meters)
					Latitude (North)			Longitude (East)			
					°	′	″	°	′	″	
57.	Wasit	Jazman (Zurbatia)	WT1	W, S	33	8	50	46	4	39	

***W- Winter Bird (& other fauna) surveys,**
Spr- Spring Plant surveys (southern Iraq only),
S – Summer Bird (& other fauna) surveys (Botany surveys in Kurdistan, Northern Iraq were done with the bird surveys)

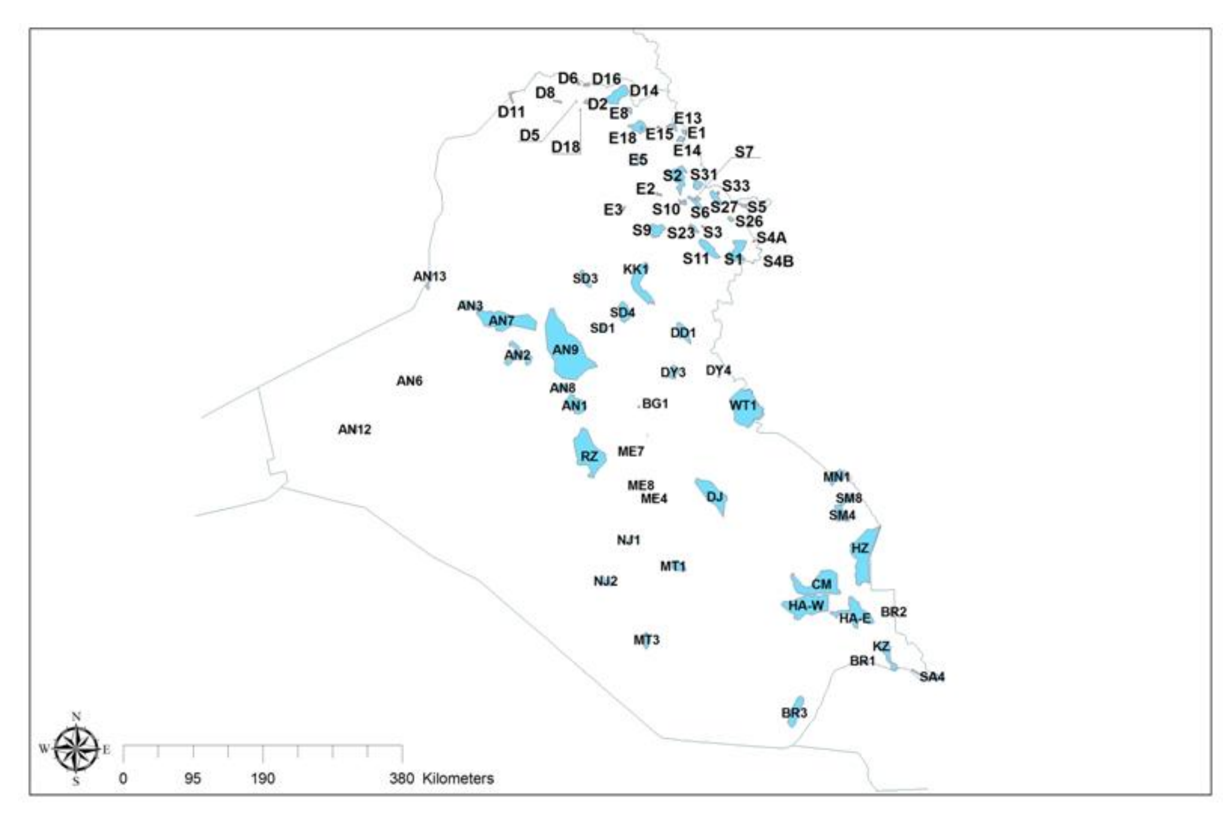


Plate 2: Map of the surveyed areas in 2010

Methods & Procedures

Sites

All sites were located using a *Garmin* GPS Device. Occasionally maps (e.g. 1:100000 scale) were used to trace the fieldwork path. A Basic Site Information Sheet was used to record information on the sites (GPS Location, nearest town, security and logistical details, photos taken at the site, basic habitat information and for drawing the map to site).

Note: Some sites in Sulaimani were visited in April for a spring Nature Iraq training program and then were revisited later in the year. The dates of these separate observations are listed in the site accounts but the findings have been integrated with the regular observations. For the south, the decision was made to cover more terrestrial areas (in addition to wetlands) including oases

and seasonal wetlands identified in the desert areas of the south. Nine terrestrial sites were added to the KBA list in the south during the surveys in 2010. These sites were in the western, southwestern, and southern parts of the Lower Desert of Iraq. Most of these areas are remote and relatively unimpacted as very few people visit these areas.

Site Threat Assessments

In winter and summer of 2010, the survey team conducted a site threat assessment using the Pressure-State-Response (PSR) Model: as outlined by the BirdLife International (2006) report on Monitoring Important Bird Areas. The bulk of this section quotes full sections of this report. The PSR Model relies on three types of indicators:

- **Pressure** - Pressure indicators identify and track the major threats to important bird populations at IBAs. Examples include rates of agricultural expansion, over-exploitation and pollution.
- **State** - State indicators refer to the condition of the site, with respect to its important bird populations. State indicators might be population counts of the birds themselves. They might also be measures of the extent and quality of the habitat required by these birds.
- **Response** - Response indicators identify and track conservation actions: for example, changes in conservation designation, implementation of conservation projects and establishment of Local Conservation Groups (LCGs).

Pressure Indicators

These consist of the following eleven threat types, most of which were assessed for all sites in the 2010 survey:

1. **Agricultural expansion & intensification:** Threats from farming and ranching as a result of agricultural expansion and intensification, including silviculture, mariculture and aquaculture. Note that wood and pulp plantations includesafforestation, and livestock farming and ranching includes forest grazing. Agricultural pest control and agricultural pollution-specific problems apply to '5. Overexploitation, persecution & control' and '9. Pollution' respectively.
2. **Residential & commercial development:** Threats from human settlements or other non-agricultural land uses with a substantialfootprint; resulting in habitat destruction and degradation, also causing mortality through collision. Note that domestic or industrial pollution-specific problems apply to '9 Pollution'.
3. **Energy production & mining:** Threats from production of non-biological resources; resulting in habitat destruction and degradation, also causing mortality through collision. Note that renewable energy includes windfarms.
4. **Transportation & service corridors:** Threats from long narrow transport corridors and the vehicles that use them; resulting in habitatdestruction and degradation, disturbance and collision.
5. **Over-exploitation, persecution & control**: Threats from consumptive use of wild biological resources including both deliberate andunintentional harvesting effects; also persecution or control of specific species. Note that hunting includes egg-collecting,

gatheringincludes firewood collection, and logging includes clear cutting, selective logging and charcoal production.

6. **Human intrusions & disturbance:** Threats from human activities that alter, destroy and disturb habitats and species associated withnon-consumptive uses of biological resources.
7. **Natural system modifications**: Threats from actions that convert or degrade habitat in service of managing natural or semi-naturalsystems, often to improve human welfare. Note that 'other ecosystem modifications' includes intensification of forest management, abandonment of managed lands, reduction of land management, and under grazing. 'Dams & water management/use' includesconstruction and impact of dykes/dams/barrages, filling in of wetlands, groundwater abstraction, drainage, dredging andcanalisation.
8. **Invasive & other problematic species & genes:** Threats from non-native and native plants, animals, pathogens and other microbes,or genetic materials that have or are predicted to have harmful effects on biodiversity (through mortality of species or alteration ofhabitats) following their introduction, spread and/or increase in abundance. The KBA team was not able to assess these threats due to lack of information.
9. **Pollution:** Threats from introduction of exotic and/or excess materials from point and non-point sources causing mortality of speciesand/or alteration of habitats. Note that domestic and urban waste water includes sewage and run-off; industrial and military effluentsincludes oils spills and seepage from mining; agricultural and forestry effluents and practices includes nutrient loads, soil erosion,sedimentation, high fertiliser input, excessive use of chemicals and salinisation; and air-borne pollutants includes acid rain.
10. **Geological events**: Threats from catastophic geological events that have the potential to cause severe damage to habitats and species. The KBA team was not able to assess these threats due to lack of information but in most cases the main geological threats facing Iraq are earthquakes.
11. **Climate change & severe weather:** Threats from long-term climatic changes which may be linked to global warming andother severe climatic/weather events. The KBA team did not have adequate information to assess these threats but global warming, desertification and increased dust storm events are potentially significant threats in Iraq.

Each threat class was rated based on its Timing, Scope and Severity to provide an integrated threat assessment score that would classify the particular threat classification as Low, Medium, High or Very High.

State Indicators

The condition or state of the environment is an assessment may be based on the following:

- Population sizes for one or more 'trigger' species (for which there is good information) or each 'trigger' species assessed individually (then applying the 'weakest link' approach)
- The area and quality of the key habitats on which the 'trigger' species depend, as an indirect measure, or 'surrogate', for population size.

For the most part state indicators for these KBA sites would be based on an assessment of the conditions of the habitat at each site. For the most part this assessment was not carried out at

the KBA sites in 2010 due to lack of adequate habitat and habitat/species association information.

Response Indicators

The response indicators are described as follows:

- These indicators guage the level of response to given threats and are rated based on the level of conservation designation, management planning and conservation actions that have taken place at a given site.

Most KBA sites in 2010, except in a very few limited cases noted in the text, would score very low in terms of response to threats as there are few national, regional or local institutions, policies, or resources allocated for addressing environmental threats (pressures) in Iraq. For this reason, this part of the PSR Model assessment was not carried out.

Birds

To accomplish a rapid assessment of bird species and numbers at any given site is not easy. Bird observations were made using 8x30 and/or 8x42 binoculars and 500 mm spotting scopes. The methodology that Nature Iraq has adopted is relatively simple and can be summed up as 'walking, scanning and counting' along a route that attempts to cover the key habitats of the site. This is referred to as an area count. In general small birds (passerines and near-passerines) will be located (by sight or voice) within a 100-200m width; for larger birds (such as raptors) the range may be up to 2kms; shy birds may not be located. Ideally more than one visit should be made to a site in each season, and certainly over different years, however with the constraints of time and logistics it is accepted that this is not always possible.

The counts obtained are those that are entered onto the Nature Iraq KBA database. However given the knowledge of the area actually surveyed and the area and habitats of the whole KBA site it is possible, by extrapolation to make crude population estimates or 'best guesses' for a number of species.

In the case of wetland sites, particularly areas of open water, counting all waterbirds (especially wildfowl and waders) is often possible by counting from vantage points on the shore; totals are then obtained by aggregating the counts. Occasionally a motor-canoe was used for moving over inaccessible or deep waters, or observations were made while wading within reed beds. Also, cars were used to cover the more accessible areas.

For a more accurate assessment of the populations of passerines and near-passerines (as well as their relative abundance and specific density) Transects[2] and Spot Counts[3]should be made (and were occasionally done in the KBA survey work). However they are more suited to detailed study of a site when there are no time constraints and especially for monitoring purposes. For larger birds, notably raptors, sitting and scanning from suitable vantage points for at least 3 hours is essential to assess numbers present, particularly during the breeding season when birds are displaying.

The main identification guides used in the surveys were Salim, Porter, Christensen, Schiermaker-Hanson, & Jbour (2006); Porter, Christensen, & Hansen (1996); Mullarney, Svensson, Dan, & Grant (2001) and Allouse (1953& 1963), the latter was used to review and compare the bird populations over certain areas as a whole.

Breeding Information

During the summer survey, a strong emphasis was placed on determining the breeding status of birds. Breeding evidence was based on British Trust for Ornithology guidelines adapted by Richard Porter. The following table lists the breeding codes used.

Table 5: Breeding codes for Bird Observations during the summer survey

Non-breeding	
F	**F**lying over
M	Species observed but suspected to be still on **M**igration
U	Species observed but suspected to be s**U**mmering non-breeder
Possible breeder	
H	Species observed in breeding season in suitable nesting **H**abitat
S	**S**inging male present in breeding season in suitable breeding habitat
Probable breeding	
P	**P**air observed in suitable nesting habitat in breeding season
T	Permanent **T**erritory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more at the same place or many individuals on one day
D	Courtship and **D**isplay (judged to be in or near potential breeding habitat; be cautious with wildfowl)
N	Visiting probable **N**est site
A	**A**gitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby
I	Brood patch on adult examined in the hand, suggesting **I**ncubation

[2] Transect count: Identifying and counting birds as the observer walks a straight line between two GPS plotted points.

[3] Spot Counts or Point Counts: Identifying and counting birds from a stationary location.

B	Nest **B**uilding
Confirmed breeding	
DD	**D**istraction-**D**isplay or injury feigning
UN	**U**sed **N**est or eggshells found (occupied or laid within period of survey)
FL	Recently **FL**edged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitat.
ON	Adults entering or leaving nest-site in circumstances indicating **O**ccupied **N**est (including high nests or nest holes, the contents of which can not be seen) or adults seen incubating
FF	Adult carrying **F**aecal sac or **F**ood for young
NE	**N**est containing **E**ggs
NY	**N**est with **Y**oung seen or heard

In winter and summer, data was entered into a Microsoft Access 2007 database that was developed specifically for KBA bird assessments in 2009. In addition, all data from the 2010 survey has been uploaded to the WorldBirds Database (a joint project of BirdLife International, The Royal Society for the Protection of Birds (RSPB) and Audubon) and can be accessed from their public website at www.worldbirds.org.

Mammals & Other Fauna

Effortsto conduct a more rigorous mammal survey was initiated as part of the KBA Project in 2007 in both southern and Kurdistan, northern Iraq, but was discontinued pending more capacity-building. Field teams have always collected anecdotal information regarding mammals and other fauna including taking pictures of live animals, tracks or any signs that the presence of these speciesin the survey sites. Since most of the mammals are nocturnal, the teams were rarely able to see them in these rapid assessment field works. However, a more focused survey on mammals within the KBA Project was begun again in 2009 in Kurdistan, northern Iraq and was continued during the winter and summer of 2010. This survey emphasized collecting further information from locals regarding species reported at sites andconcerning hunting issues in the areas.In addition, information on species trade was also collected and a separate paper is currently in preparation regarding animal trade and hunting within the country.

Information for the 2010 Kurdistan surveys was collected through three means: interviewing individuals at local communities near survey sites; visiting and interviewing individuals at local animal markets; and visiting and interviewing staff at local animal zoos.

Observations at thesurvey sites were also done through taking photos of live mammals seen anecdotally as well as phtographing their tracks and signs and then identifying these using the followingreferences: Murieand Elbroch (2005) and Stokesand Stokes (1986). Otherwise information about the presence and absence of different kinds of mammals were gathered through tapedinterviews with villagers in and found around the survey areas.

In areas where there are minefields site access is difficult, therefore the team replied completely on taped interview with villagers at the sites.

Visits to animal markets included taped interviews with pet shop owners and any local hunters that are present. In addition, in 2010, notes were taken of the number and types of species that were shown in the market, how they were contained, and estimation of the animals' health status and origin, along with photos of the animals that were used when necessary for later identification of species. The same procedure was followed for the animal zoos particularly where zoos and animal parks appear to be involved in species trade activities.

During the summer survey the team used a voice recorder to maintain a record of the interviews, (making sure to protect the anonymity of those interviewed) to allow the interviewer to collect the information freely and accurately. All data was entered into a Microsoft Excel datasheet, under the three categories of site visits, animal markets, and animal zoos. Since the works on mammals are not fully developed yet, using a database to enter the information collected will be required for future, site-specific surveys.

Information collected on other fauna, including reptiles, amphibians and insects, was also, as stated above, anecdotal. Due to the fact that the team is not well trained in survey techniques for most of these species, collecting information about them is challenging; data assembly is only based on taking photos of any species the field teams located while visiting the sites during the KBA rapid assessment surveys. When possible, efforts were made to identify these species later from photographs.

Plants

The botany survey was conducted in the spring in southern Iraq and in summer in Kurdistan, Northern Iraq. Waypoints are selected within the main key habitat types located within the site. GPS coordinates and the elevation for each waypoint along with photographs of the waypoint are taken and a description including slope, exposure, and percentage of vegetated area is developed (the latter is described more fully below). The dominate tree, shrub, herb and grasses are noted in the waypoint and a number representing the ecological status of the waypoint is

determined (also described below). Any threats to the site are also noted. Plant identification is done in the field and those plants that can not be identified are collected in plastic bags and then pressed before being sent back to the office of identification.

The following references were used to assist in the development of plant samples Sample identification was done in the field. The plants that could not be identified were collected and then identified in the lab using the following references: Babashekh (2006), Bermani (1981), Davis (1978 and 1982),Guest (1966), Houri and Houri (2001, Vol I & II), Ghahraman (1983, 1987, 1999, 2001 and 2003), Maahzide (2003), Mashhadani (1992), Rawi (1964), Raza and Dawd (1983) and Sardar (2003), Tohme and Tome (2002), and Townsend and Guest (1966, 1968, 1974, 1980a and 1980b). General information on habitats was based on Guest (1966).

Pictures of plants were also taken in order to help with their identification and the description of their status. Profile pictures (detailed photos of plant parts to be assembled later into a complete digital profile of the plant) were taken for some plants in order to help in the identification (see the plate below). The plant profiles as well as the method of assigning of herbarium numbers of individual specimens were introduced into the 2009 survey by the Royal Botanic Garden of Edinburgh (RBGE)/Center of Middle Eastern Plants (CMEP). Ideas about the vegetation cover at the site were formed using direct observation (estimating the percentage of vegetated and non-vegetated area). The ecological condition of the site was rated on a scale of 1 to 5 with 1 representing the least disturbed or impacted (best ecological condition and quality) and 5 representing the most disturbed or impacted (poorest ecological condition and quality). Though this methodology is subjective, the goal of the survey was simply to conduct a rapid assessment of the overall plant communities as well as their habitat and health.

Since the summer of 2009, data was entered into a Microsoft Access 2007 database that was developed specifically for KBA assessments.

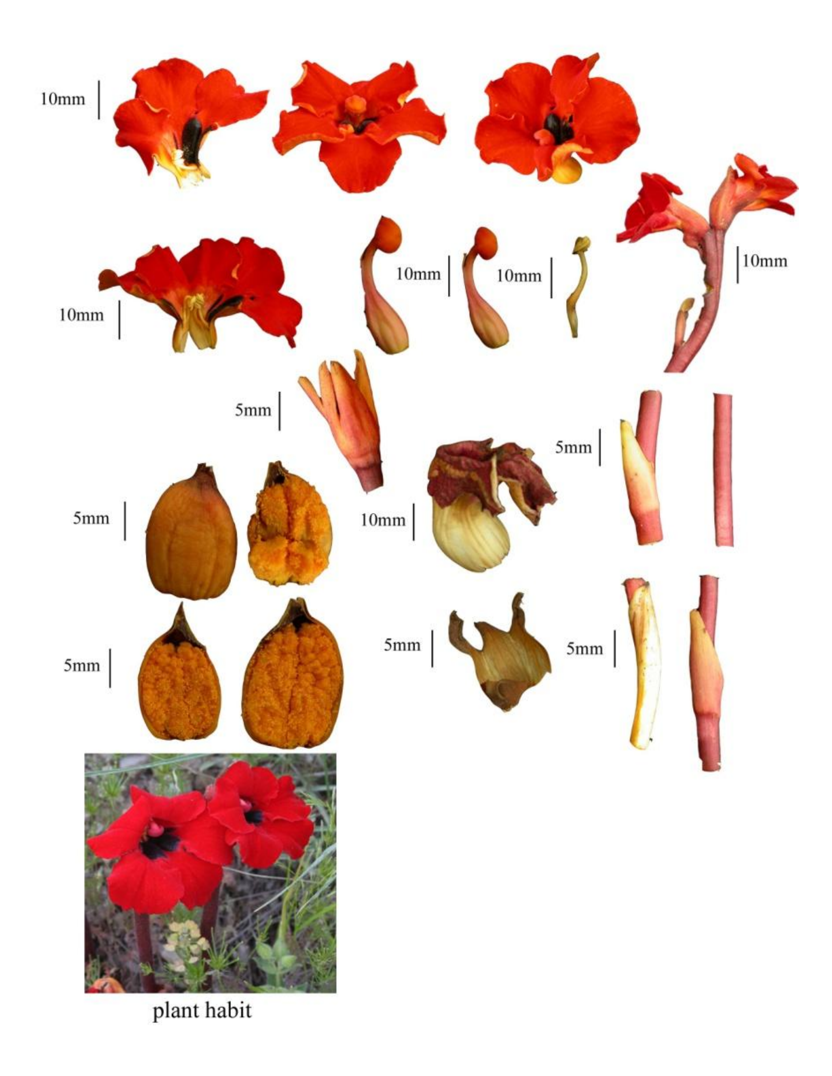


Plate 3: Partial Plant profile of *Phelypaea coccinea* at Peramagroon (S6) developed with Photoshop CS3

Kurdistan, northern Iraq 2010 Site Review can be obtained by writing to info@natureiraq.org

Central Iraq 2010 Site Review can be obtained by writing to info@natureiraq.org

Southern Iraq 2010 Site Review can be obtained by writing to info@natureiraq.org

Summary & Conclusions

Thoughout the country-wide Key Biodiversity Areas program, 96 sites were visited in 2010, with over 451104 individual bird observations (412052 for the winter and 39052 during the summer). During winter, there were 154 species seen in the south, 143 species seen in central Iraq and 125 seen in Kurdistan, Northern Iraq. During summer, there were 133 species seen in the south, 150 seen in central Iraq and 138 species seen in Kurdistan, Iraq.

For the spring botany survey in southern Iraq, there were 648 individual plant records obtained from 38 waypoints within 32 sites. During the summer survey of Iraqi Kurdistan, 2297 individual plant records were obtained and 25 waypoints were documented within 20 sites.

Additional information was also obtained on other fauna, such as mammals and reptiles. The quality of information being obtained from locals on other fauna at sites was also improved. A secondary report is being released that provides more details on animal trade and hunting in Iraq.

A full list of the birds seen both the winter and summer 2010 surveys throughout Southern, Central/Western and Northern (Kurdistan) Iraq is provided in Annex A. In addition, 197 plant species were identified in the south and 519 plant species were identified in Kurdistan, northern Iraq and a full list are these are provided in Annex B. Important site information on mammal and other species was also obtained from information on animal markets and zoos. This information is provided in Annex C.

The following sections summarize the results of the three separate surveys in Kurdistan, Central and Southern Iraq during 2010. It also provides a more comprehensive and standardized threat assessment and a discussion of the delineations of the sites. Lastly, it provides recommendations on future actions for the specific Key Biodiversity Areas program, and biodiversity protection in general. Please note that the KBA, IBA & IPA critiera assessments for each site that were presented in the site review and reviewed here are preliminary and further refinements are in progress.

General findings on Birds

During the 2010 winter surveys in Kurdistan Iraq, there were several species observed, including 630 Lesser White-fronted Geese *Anser erythropus* (nearly 3% of the world population), two Red-breasted Geese *Branta ruficollis,* two Pine Buntings *Emberiza leucocephalos,* three Little Bustards *Tetrax tetrax* (the first recorded in Iraq since 1940s), 246 Great Black-headed Gulls *Larus*

ichthyaetus, 14 Alpine Accentors *Prunella collaris*, nine Eastern Imperial Eagles *Aquila heliaca*, one Red Kite *Milvus milvus*, and 20 Eurasian Siskins *Carduelis spinus*.

The central and western deserts of Iraq are one of the main migration routes for the raptors in Iraq. During spring, over 450 Lesser Kestrels *Falco naumanni*, 500 Black Kites *Milvus migrans* and Black-eared Kites *Milvus migrans lineatus*, four Eastern Imperial Eagles *Aquila heliaca* and six Pallid Harriers *Circus macrourus* were observed.

The following species were observed in the southern marshes, a unique place for the wildlife in the world: 7,000 Greater Flamingos *Phoenicopterus roseus*, 30,000 Northern Shovelers *Anas clypeata*, 41,000 Marbled Ducks *Marmaronetta angustirostris*, 19,000 Eastern Greylag Geese, 9,000 Red-crested Pochards *Netta rufina*, 2,500 Ferruginous Ducks *Aythya nyroca*, 6,000 Black-tailed Godwits *Limosa limosa*, 6,000 Pygmy Cormorants *Phalacrocorax pygmeus*, 8,000 Dead Sea Sparrows *Passer moabiticus,* and seven Grey Hypocolius *Hypocolius ampelinus.* The White-crowned Wheatear *Oenanthe leucopyga* was added to the Iraq bird list.

In May and June, Richard Porter, (an ornithology expert who advises Nature Iraq) again joined Nature Iraq and the Iraqi Ministry of Environment's bird team during their Key Biodiversity Areas survey and Nature Iraq/BirdLife International annual training course. Many new breeding areas were discoveredand first breedings in Iraq for Common Starling *Sturnus vulgaris,* Upcher's Warbler *Hippolais languida* and Eastern Orphean Warbler *Sylvia crassirostris* (found breeding at six and two sites respectively) were recorded. A total of 26 pairs of Egyptian Vultures *Neophron percnopterus* were located, as well as two pairs of Peregrines *Falco peregrines*, two pairs of Kurdish Wheatears *Oenanthe xanthoprymna,* two pairs of Barbary Falcons *Falco pelegrinoides* and a singing Eastern Bonelli's Warbler *Phylloscopus orientalis*. Great Reed Warblers *Acrocephalus arundinaceus* were found nesting at two sites, and Sedge Warblers *Acrocephalus scirpaceus* was found at one site – if breeding is proven here, this would be the first time it is observed in Iraq. A pair of Eastern Mourning Wheatears *Oenanthe lugens* were on territory at Peramagroon and European Rollers *Coracias garrulus* were breeding at nine sites.

In addition, Eastern Cinereous Buntings *Emberiza semenowi* were observed at 12 sites (60 pairs in total). Little Swifts *Apus affinis* were breeding in two colonies of over 10 and 50 pairs in caves at Chami Razan, and Dukan. Alpine Swifts *Tachymarptis melba* were found at two colonies at Ahmed Awa (S4A) and Bekhal Waterfall (Near E12- Gali Ali Beg). Six Desert Finches *Rhodospiza obsoleta* were found at three sites and were probably nesting.

In April, May, and June over 40 sites were visited in southern, western, and central Iraq. Red-crested Pochards *Netta rufina* were observedbreeding for the first time in Iraq in the Southern Marshes, and a total of 593 adults were counted. In the south, Ferruginous Ducks *Aythya nyroca* were also discovered nesting at several sites and 129 adults were observed, while over 270 Marbled Ducks *Marmaronetta angustirostris* were found – most appeared to be breeding. The endemic Basra Reed Warbler *Acrocephalus griseldis* were found in good numbers and a total of 129 counted, many in newly flooded areas where the reeds are successfully recolonising. Similarly, the endemic Iraq Babbler *Turdoides altirostris* was present in many sites that were visited and a total of 93 were observed. In various areas around the edge of the marshes 57 individuals of the near-endemic Hypocolius *Hypocolius ampelinus* were also found.

In the central and western Iraq surveys Marbled Ducks were found at four sites where they were most likely breeding. Slender-billed Gulls *Chroicocephalus genei* were observed at 15 sites totalling 467; display and pairing was noted at one site. Over 90 Armenian Gulls *Larus armenicus* were also counted but there was no evidence to suggest breeding. Spur-winged Lapwings *Vanellus spinosus*, White-tailed Lapwings *Vanellus leucurus*, and Collared Pratincoles *Glareola pratincola* were all found in areas where breeding was suspected. Lesser Kestrels *Falco naumanni* and a pair of Egyptian Vultures *Neophron percnopterus* were discovered breeding to the west of their known breeding range in Iraq. In the autumn, during Nature Iraq's searches for migrant Sociable Lapwings *Vanellus gregarius*, a female Red-footed Falcon *Falco vespertinus* (found on 14 October near Tikrit) was the first observed in Iraq.

Later in summer, in a separate survey not covered by the site review in this report, White-winged Snowfinch *Montifringilla nivalis*, Golden Eagle *Aquila chrysaetos*, Lammergeier *Gypaetus barbatus*, Winter Wren *Troglodytes troglodytes* (first breeding record for Iraq) and Black Redstart *Phoenicurus ochruros* were observed at Peramagroon Mountain (S6).

It is important to note that the KBA conservation assessments done in this report are only provisional. The counts for species listed in the criteria table for each site are the actual counts obtained in the field and do not represent any extrapolation. Images of some important Bird species can be found in Annex D.

General findings on plants

Two plant species (*Rumex ribes* and *Firtillaria imperialis*) have always been collected by people for food and ornamental purposes; and are gathered at a rate that may threaten these species at many sites where it has historically been found.

The oak trees (*Quercus* sp.) were the most dominant plants at most of the sites and are considered the representative tree of Kurdistan, northern Iraq. Some plant families such as Poaceae, Fabaceae, Juganaceae, Caryophyllaceae, Lamiaceae, Asteraceae, Fagaceae, Liliaceae, Boraginaceae, Ranunculaceae, Brassicaceae, Apiaceae, and Scrophullaraceae were present at most sites. However, other families, such as Thymelaceae, Zygophyllaceae, Tamaricaceae, Valerianaceae, Orchidaceae and Viscaceae, were only occasionally found in some sites.

A complete list of threatened, rare and/or endemic plants is not yet available for Iraq, but an initial list was completed by the Royal Botanical Gardens Edinburgh. This list requires additional surveys before it is finalized; therefore the findings in this document concerning rare and endemic species are preliminary. There may be many endemic/near-endemic or rare (or both) plants at many of the sites thatindicate the high conservation value of the sites. Some of these plants were very rare or restricted to only one site. They may meet the first IPA criteria of being threatened species, but more botanical and Red-listing studies would be needed to determine this. The table below lists the conservation status of plants for Kurdistan (note that the conservation status listed here is provisional):

Table 6: Potential conservation concern plant species and their occurance in within 2010 survey sites in Iraqi Kurdistan

Scientific Name	Potential conservation status	Found in the following sites
Symphytum kurdicum	Regional Endemic	S6, S11, D5, S33, D2A
Pisum formosum	Regional Endemic	S23, S6, S24, S10, S26, S11, S32B, S4B, E8A, E18, E14, D5, D2A, D18, D16
Onosma albo-roseum	Regional Endemic	S10, S11, S4B, E5A, E18, E14, D2A, D18
Bromus brachstachys	Rare	S11, E8A
Silybum marianum	Regional Endemic	S23, S10, D10
Notobasis syriaca	Regional Endemic	S23, S10, S26, S2, E8A, E18, D10
Hymenocrater longifrons	Regional Endemic	S4B
Orchis colina	Rare	S4B
Quercus macranthera	Rare	S27, S6 (new site), D16, D5, D2B, S32B
Ranunculus sphaerospermus	Rare	S5
Tamarix brachystachys	Rare	S5
Cephalaria syriaca	Regional Endemic	S26, S2, S11, S32B, S4B, E8A, E14, D5, D2A, D18, D16
Paronchyia kurdica	Regional Endemic	S6, S24, E14, D16
Juncus effuses	Very Rare	S2, S32B
Rubus caesius	Rare	S1
Muscari tenuiflorum	Rare	S1
Alcea sulphorum	Rare	S1

Thymus syriacus	Regional Endemic	S6, S2, E8A, D2A
Campanula mardinensis	Regional Endemic	S6, S24, S10
Lactuca hispidus	Very Rare	S6,
Cousinia odontolepis	Very Rare	S6,
Phelypaea coccinea	Very Rare	S6,
Zeugandra iranica	Very Rare	S2, S32B
Salix babylonica	Rare	S2
Cousinia inflate	Regional Endemic	S6 (new site), S24
Aristolochia paecilantha	Rare	S23, S6, E5A, D2A
Allium chryantherum	Rare	E5A
Astragalus helgurdensis	Regional Endemic & Rare	E14
Fibigia suffroticosa	Rare	S4B, D2A
Tulipa kurdica	Regional Endemic & Rare	E13, E15,
Dianthus asperula	Very Rare	D16,
Astragalus spinosus	Regional Endemic	S23, S11, D5
Linum velutinum	Rare	D5, D2A,
Briza minor	Rare	S23, D5
Asyneuma amplexicaule spp. Amplexicaule	Rare	D5,
Delphinium kurdicum	Regional Endemic	D8,
Michauxia tchihatchewii	Rare	D2A
Cicer bijugum	Very Rare	D10
Michauxia nuda	Rare	E5
Iris germanica	Rare	S4B
Hesperis kurdica	Regional Endemic	S32B
Gladiolus kotschyanus	Rare	D16
Iris barnumae	Rare & Regional Endemic	E1
Anacamptis pyramidalis	Very Rare	D2B
Cephalanthera kurdica	Regional Endemic	S11, S4B, E14, D5, D2A
Ornithogalum iraqense	Regional Endemic	E1
Hesperis straussii	Rare	S32B
Himantoglossum hircinum	Regional Endemic	D2A

By evaluating the southern sites based on their plant species richness (strictly by number of plant species), the highest quality sites in the south were: Umm An Ni'aaj (HZ1), Udhaim (HZ2), Bushes near Umm Al Warid (HZ9), Abu Zirig (CM16), Zubaidaat (MN2), , Umm Qasr Port (KZ6), Tell Al Laham (TQ2), Jabal Senam (BR1), Al Lehais (BR4), Al Basrogia (ME 13), Razzaza Lake (ME5), and Wadi Al Waaer (NJ1).

The southern sites were also evaluated on their overall ecological condition on a scale of 1-5, with 1 indicating 0% disturbance, or no impact, and 5 representing 100% disturbance or impact. Given the massive drainage campaign of the 1990s in the Southern Mesopotamian marshlands, no site can be considered to have no impact or disturbance. This scale is considered a rough estimate of ecological recovery. Abu Zirig (CM16) and Bushes near Umm Al Warid (HZ9) are the only sites that were rated at 2 (25% disturbed); Teeb Oasis (MN5) is the only site that rated at

5, or 100% disturbed. All the other sites were rated 3 (50% disturbed) or 4 (75% disturbed) because of changes in these sites mainly due to the water shortage and other threats.

Evaluation of sites based on their richness and habitat types is still an on going process within the Nature Iraq KBA Project. This discussion presents only preliminary findings from the last survey. A list of sites that match these criteria is not complete, but there are some sites that may match one or two of these criteria. The Mesopotamian marshlands (and the survey sites that lay within these marshlands) should be considered key threatened habitats of regional and global importance. Sites such as Umm An Ni'aaj (HZ1), Udhaim (HZ2), Bushes near Umm Al Warid (HZ9), and Abu Zirig (CM16) are relatively rich in plant species, particularly in aquatic plants. Other sites such as Zubaidaat (MN2), Umm Qasar Port (KZ6), Tell Al Laham (TQ2), Jabal Senam (BR1), Al Lehais (BR4), Al Basrogia (ME 13), Razzaza Lake (ME5), and Wadi Al Waaer (NJ1) are relatively rich with desert or halophytic plants. A complete list of threatened, rare and/or endemic plants is not yet available for Iraq but an initial assessment was done in this report giving the status of most of the plants identified during the last survey (Spring 2010, see Annex B). Images of some of the common and/or important plant species can be found in Annex D.

Issues and areas of importance for other species

Sites

Local interviews conducted as part of the KBA studies identified the possible presence of several globally and national threatened species of animals in areas surveyed. Evidence from nterviews revealed the potential presence of the Persian leopard *Panthera pardus saxicolor,* which is classified as globally near-threatened (NT) and was nationally reported as extinct (EX) until two specimens were identified in 2008 in Diyala (from an animal hunted near Mandli (DY4)) and Darbandikhan (S1) (near the village of Mortka from an animal killed by landmines). Sightings of this species were reported at three sites in the current survey: Bradost Mountain (E18), where border guards reported a sighting of the animal in 2008; Ahmed Awa area (S4A), where residents reported that a Persian leopard had been killed by local hunters on the Iran-Iraq border in 2002; and Assos Mountain area (S32), where a Persian leopard was observed by a hunter in a nearby agricultural field in 2009.

Residents interviewed also reported sightings of the Striped hyena *Hyaena hyena* (NT) in the Chumlagh village area near Dukan Lake (S2) and Bradost (E18) and Sakran Mountains (E14).

One was also recently killed by hunters in Dalmaj (ME11). Interviewees also reported sightings of the Eurasian otter *Lutra lutra,* which is recognized as a near-threatened (NT) species by IUCN Red List. At Dukan Lake (S2), a fisherman recalled the killing of an otter in 1996, which was then sold for $US200. Fishermen at Darbandikhan Lake (S1) also reported observations of otters on separate occasions. Otter sightings were also reported in the areas of Awesar and Bradost, and tracks had been spotted along the Fishkaboor River (D11). In addition, tracks and signs of the Eurasian Otter were found along the Little Zab River in the village of Klesa a few kilometers downstream from Dukan and upstream of Taq Taq (E2). Some tracks and signs (fish scales) were found in West Hammar, which were thought to be for the smooth-coated Otter based on the description of the local fishmen. Wild goats *Capra aegagrus* (VU) are found in considerable numbers in the Barzan area (E8), with the winter count totalling at approximately 80 and a summer count of 12. (Note: an outbreak of PRR virus has caused high mortality in wild goats at Barzan during December 2010/January 2011). Tracks and scats of wild goats were identified in Peramagroon Mountain (S6). Reports of wild goat sightings were also made by the locals interviewed in Darbandikhan (S1), Qara Dagh (S11), Assos Mountain (S32), Awesar (S4B), and Bradost Mountain (E18). Residents also reported 22 wild goats that were hunted in Sakran Mountain (E14) last year.

Data gathered during the survey also suggests the presence of several global and locally threatened species at certain sites. This includes, for example: the Goitered gazelle *Gazella subgutturosa* (VU) and Roe deer *Capreolus capreolus* (LC) in the Maidan area (S22); Persian fallow deer *Dama dama mesopotamica* (EN) was reportedly seen by a local in 2006 in the Ser Amadia area (D2A) (this animal is thought to be extinct in Iraq according to the IUCN); the Eurasian lynx *Lynx lynx* (LC) in the Darbandikhan area (S1) and Mountain sheep *Ovis ammon* (LC) at Daban Mountain (Homer Qawm & Shadala Valley (S24)). There are some reserves in Iraq managed by the Ministry of Agriculture and during 2010 one, the Rutba and Al Massad Gazelles Reserve (AN12), was visited in winter that has several enclosures holding Goitered gazelles *G. subgutturosa* (David Mallon of the IUCN/SSC Antelope Specialist Group indicated that the Rutba gazelles may all be *G.s. marica,* personal communication). The Brown bear *Ursus arctos* (LC) has been reported in Doli Smaquli (E5A), Ahmed Awa (S4A), Sakran Mountain (E14), Garagu (D5) and Dure (D16). Other mammalian species whose status is considered at a level of least concern (i.e. less likely under the threat of population decline locally and globally) and were commonly sighted include: Golden jackal *Canis aureus*, Red fox *Vulpes vulpes,* Grey wolf *Canis lupus*, Indian-crested porcupine *Hystrix indica*, Eastern European hedgehog *Erinacious concolar*, Eurasian badger

Meles meles, Brown hare *Lepus capensis*, Wild boar *Sus scrofa*, Jungle cat *Felis chaus*, Wild cats *Felis silvestris*, Persian squirrel *Sciurus anomalis*, and Common gray mongoose *Herpestes edwardsii.*

Interviews revealed that the majority of sites surveyed are under threat due to uncontrolled hunting. Areas reportedly inhabited by rare animal species are the areas of most intensive uncontrolled hunting activity. As detailed in a recent Nature Iraq report on animal trade and hunting in Iraq, uncontrolled hunting and trade is likely the primary cause of any decreasing population in rare species. The bodies of animals hunted are commonly sold and used for their hides and meat, and consumed for food or traditional medicinal use. Species used for folk remedies include Indian-crested Porcupine *Hystrix Indica,* which is believed to treat high blood pressure, Eurasian Magpie *Pica pica*, which supposedly cures typhoid disease, Eurasian Badger *Meles meles*, which is used for lowering blood cholesterol. Immediate action must be taken to regulate hunting in areas inhabited by rare and endangered animals. Particular attention must be paid to decreasing numbers in areas that once supported high population numbers but have been in continuous decline since the 1980s. Safe regions away from residential or urban areas must be determined to enable a secure distance between rare and endangered species and agricultural/livestock areas. Several incidents have been reported of farmers killing certain species that pose a threat to their herds or crops, most commonly Grey wolves *Canis lupus* (that are reported to have attacked sheep herds) and Wild boars *Sus scrofa* (reported to have destroyed crops).

Animal Markets & Trade Issues

The issue of animal hunting and trade is a recurring issue and one that Nature Iraq survey teams have faced throughout the six years of field survey work conducted within Iraq. Unsustainable and uncontrolled hunting and animal trade issues have been raised repeatedly, and are supported by a vast body of evidence and anecdotal information concerning the negative impact of these activities. Hunting is a significant concern in Iraq as there is no system of classification in place in Iraq by which the endangered animals can be recognized and awareness can be raised amongst the community about their status. It is because of the lack of classification that the hunting of many of endangered animal species (including the Wild goats *Capra aegagrus*, which is considered a vulnerable species according to the IUCN "Red List" of endangered species) continues and is increasing.

Iraqi Law No. 17 of the Iraq Wildlife Protection Law of 2010 recognizes 13 points regarding the issues of hunting and trade. This article aims to promote Iraq's wildlife as national heritage, and should be protected (with regard to hunting regulations) as such. While this new law gives a

rough outline of hunting procedures, it has not addressed the issue of wildlife trade within the country and between neighboring states. The Iraqi animal market is an unregulated 'black' market through which many endangered species can be viewed and bought. Markets may be attended by people who simply go to view rare species they would otherwise not see, or to purchase animals despite having insufficient knowledge of how to care for them (for example, crocodiles, snakes or even large cats, such as the African lion). Many endangered or rare species are hunted in these regions and transported throughout the country. Persian squirrels *Scuirus anomalus* are hunted in large numbers in the Kurdistan region and transported to south and central Iraqi markets for sale. As the Kurdistan Regional Government (KRG) and its police force have exercised tighter control over the region's markets, hunters and wildlife traders have extended their activities to areas under weaker police jurisdiction.

Animal trade within Iraq includes importing exotic animals through local zookeepers who obtain licenses to import the animals (which are subsequently resold to private zoos and individuals). Zookeepers also import these animals by illegally obtaining them through professional hunters in the region who smuggle the animals in to the country. Various methods are employed by hunters (in one, for example, a hunter in Sulaimani claimed to have smuggled a Wild Goat *Capra aegagrus* to Iraq from Iran by coloring its fur to mislead checkpoint officers who may have no background in identifying internationally protected animal species, such as those listed on the CITES appendices lists. The animal trade is a relatively more open business in south and central Iraq, where law enforcement is more lax compared tothe Kurdish region. It is not uncommon to find globally threatened species for sale on roadsides and in small village markets.

The most significant finding in this survey was the implication of government authorities' involvement in the illegal animal trade, whether to exploit animals for their fur, meat, or as private zoo specimens. It is highly likely that officials or anyone else that maintains private zoos in Iraq and pay traders to obtain rare and/or exotic species do not possess adequate knowledge of how to care for these animals. Particularly for large predator species, it is also likely that these animals will be killed when they reach maturity and become too dangerous to handle.

Locals interviewed near KBA survey sites provided a rough outline of hunting activities in the country. There is extensive hunting in the Kurdistan region despite legislation prohibiting hunting within the area. Hunting in the south of Iraq is largely uncontrolled and is suspected to be as equally prevalent, although poor security conditions in some areas may limit such activities or limit it strictly to locals.

Iraqi law has neglected to address animal conservation and hunting issues in anything other than a perfunctory fashion, with few steps taken toward their implementation. The most recent law created in 2010 regarding animal protection has not yet been implemented as most of the law's articles require certification by scientific authorities. As Iraq is not yet a member of CITES, animal species of specific concern to the CITES appendices are not recognized as such. Data on population numbers is insufficient, prolonging the possibility of conclusive statements on the sustainability of current harvesting practices in Iraq. Based on reports by local people interviewed as part of the KBA's survey on the presence and numbers of species in each area, a rough list of species declining in number is being developed. This data can guide future legislation, enforcement and research efforts. Although the uncontrolled hunting and trade of animals is likely to have had a major and adverse impact on the biodiversity of Iraq, there has still been no comprehensive research undertaken to quantify these trends. As Iraq has recently become a signatory to the Convention on Biological Diversity (CBD), it will be required to develop and implement a National Biodiversity Strategy and Acton Plan (NBSAP). This plan will require a thorough review of trade and hunting legislations in Iraq and, it is hoped, will take appropriate action to address the declining fauna diversity.

Zoos

Another factor that exacerbates Iraq's illicit animal trade is the level of involvement of zoos. Zoos obtain animals according to their customers' request and continue to fuel the demand for the trade. Zoos have become a market within itself where trade in wild species takes place. Zoos exploit their licensing priviliges to receive and maintain exotic species to import species for sale, in addition to their own collection. A preliminary study during the KBA survey shows that the majority of Iraqi animal markets are involved in the animal trade. More critically, the study reveals that local zoos generally do not have staff trained in handling the animals they keep. This lack of vital knowledge may be due to the fact that zoos are run chiefly for profit, resulting in very poor living conditions for the captive animals that do not seek to recreate their natural habitat. Animals imported for zoo collections are generally brought from Thailand, Africa, and Europe. Many species are also captured in the region, including Wild goats *Capra aegagrus*, Gray wolf *Canis lupus*, Brown bear *Ursus arctose*, Striped Hyena *Hyaena hyaena*, Goitered gazelle *Gazella subgutturosa*, Red fox *Vulpes vulpes*, Golden jackal *Canis aureus*, Indian crested porcupine *Hystrix indica*, Cape hare *Lepus capensis*, Eastern European Hedgehog *Erinaceus concolar*, Persian squirrel *Scuirus anomalus*, Jungle cat *Felis chaus*, and many song birds and birds of prey.

Dukan is a district in As-Sulaimaniyah governorate (located at the latitute 35° 15' 0" north and longitude 45° 33' 0" east), Northern Iraq, in which a small, unauthorized zoo of approximately 100m² is known to exist. The zoo functions as a private animal house where most, if not all, of the animals held have been captured in the Kurdistan region. The animals suffer from nutritional deficiencies as they are not given adequate food. Malnutrition and poor treatment in general causes a high level of disease amongst the animals, in turn leading to a high mortality rate, thus requiring the zoos to constantly replace animals. The increasing number of animals in captivity impacts biodiversity in the wild. Little data exists on how these practices are affecting population numbers and the conservation status of species in Iraq. It is clear that the main purpose of Iraqi zoos is for entertainment and profit, rather than education and conservation, as indicated by the poor knowledge of zookeepers in handling and caring for the animals. The health and living conditions of animals in both Iraqi zoos and animal markets are extremely poor, and urgently warrant an improvement in standards of animal care. Zoos must include an educational aspect to their public displays. It is highly recommended that animal facilities display signs on cages that accurately explain the type of species, their origin, diet, behavior, and conservation status. Iraqi law must address the urgent needs for Iraq's wildlife including: the regular conduction of scientific studies on animal populations; the regulation of hunting and trade in compliance with environmental sustainability standards in alliance with the Iraqi Ministry of Environment, Iraqi Ministry of Agriculture and the scientific study groups/think tanks in order to circumvent the impacts of animal hunting and trafficking in Iraq; and the education of local zoo keepers regarding animal care, park management, and their role in wildlife conservation.

Images of some of the common and/or important species can be found in Annex D.

Overall Conservation Concerns & Recommendations

There are many threats that pose a real danger for species, sites, and/or individual habitats. These threats include livestock production/grazing, agriculture (clearing of fields, unsustainable water use, runoff of agricultural chemicals, pesticide use), hunting practices, sewage and garbage from human settlements, and activities and disturbances related to tourism, road infrastructure and other constructions, gravel mining, dams, industrial ground and water pollution, oil development, and land mines. The majority of sites are threatened by one or more of the risks listed above.

In 2010, field teams attempted to assess survey sites based on the eleven threat types (or pressures) defined by the IUCN. Each threat type was assessed; if possible, based on its Timing, Scope and Severity to develop an integrated "Threat Status Score" of four options Low threats, Medium threats, High threats and Very high threats. These threat types are listed below and the results of this first threat assessment are presented in the following maps.

Agricultural Expansion and intensification (See Plate 4 below);
Residential and commercial development (See Plate 5 below);
Energy Production and mining (gravel mining, oil development, electrical towers, etc.) (See Plate 6 below);
Transportation & service corridors (development of roads and shipping corridors) (See Plate 7 below);
Over-exploitation, persecution and control (logging, hunting, over-fishing, etc.) (See Plate 8 below);
Human intrusions and disturbance - Effects related to non-consumption of biological resources – recreational activities, war, military exercises, work and other activities (See Plate 9 below);
Natural systems modification (dams and changes water mgmt, filling in wetlands, drainage, dredging, canalizations) (See Plate 10 below);
Invasive or other problematic species (Was not evaluated due to a lack of information)
Pollution (municipal and industrial waste and garbage, noise, air, light, & thermal pollution). (See Plate 11 below);
Geological events (threats from catastrophic geological events) (Was not evaluated due to a lack of information), and
Climate change, severe weather, drought, floods (See Plate 12 below).

Note: In some cases, the team had difficulty assessing either the scope, severity and/or timing of a particular threat; therefore, threat assessments that received a final score of 0 should be considered as either a low threat or indicate a lack of information to be able to assess the threat. This will be clarified in future threat assessments.

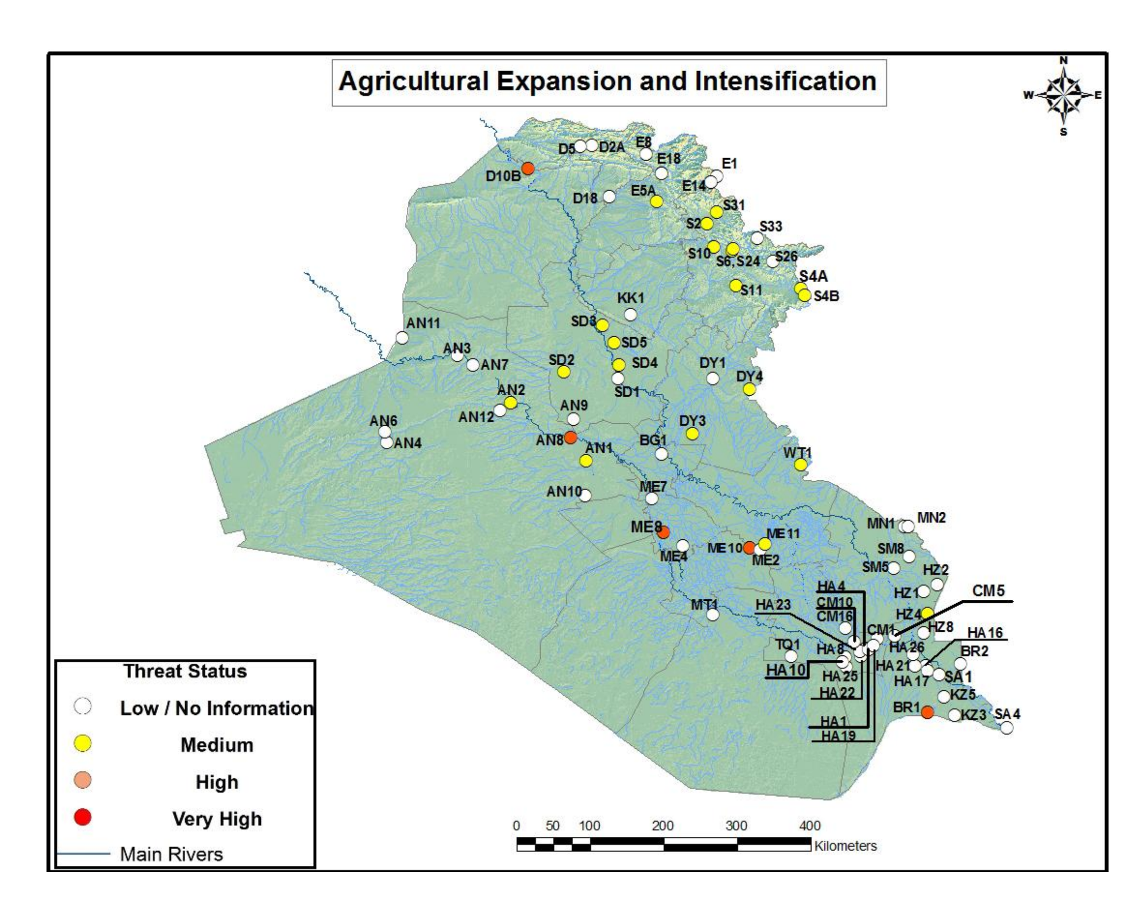


Plate 4: Sites facing Agricultural Expansion & Intensification Threats

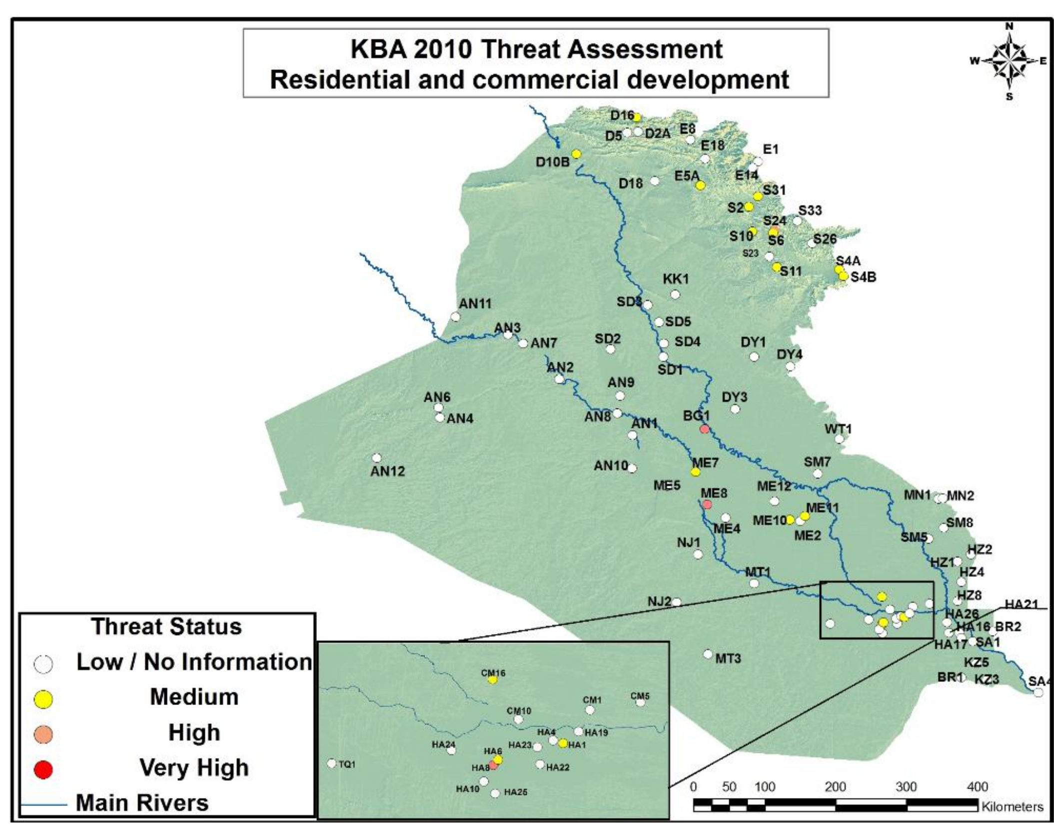


Plate 5: Sites facing Residential and commercial development threat

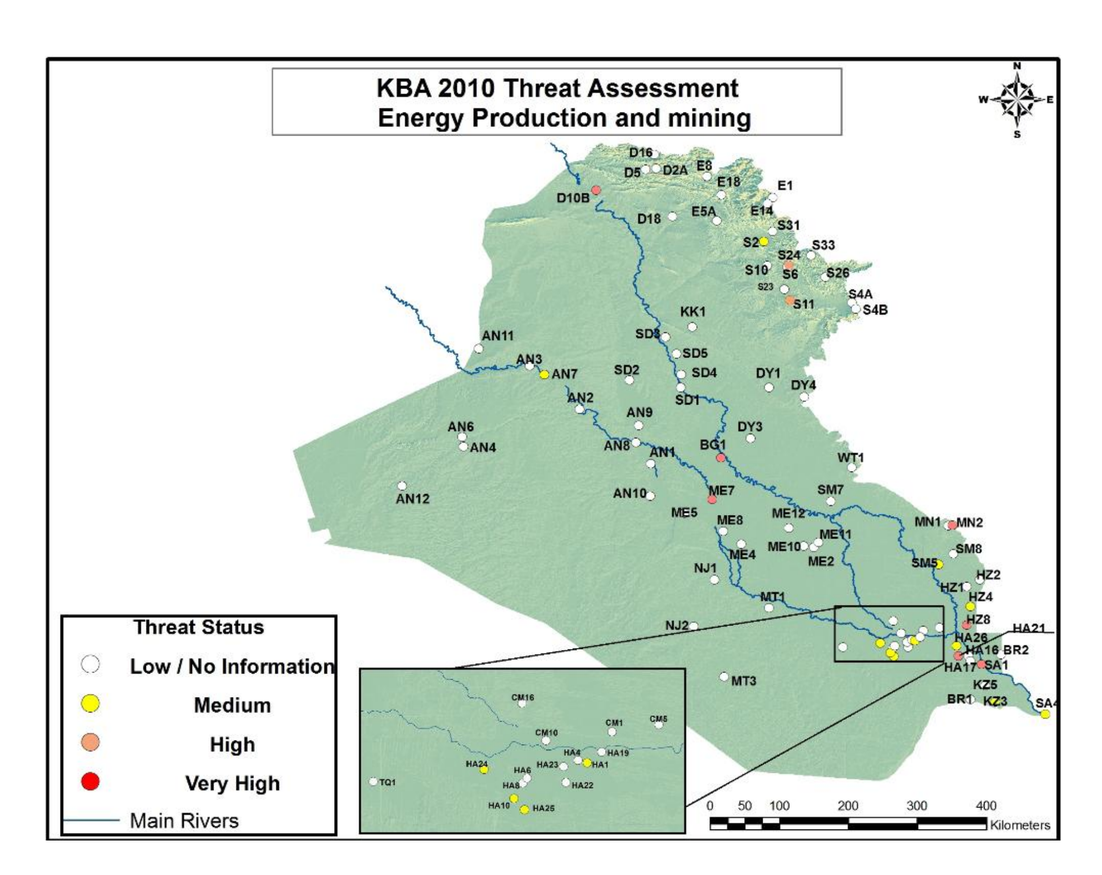


Plate 6: Sites facing Energy Production and mining threats (gravel mining, oil development, electrical towers, etc.)

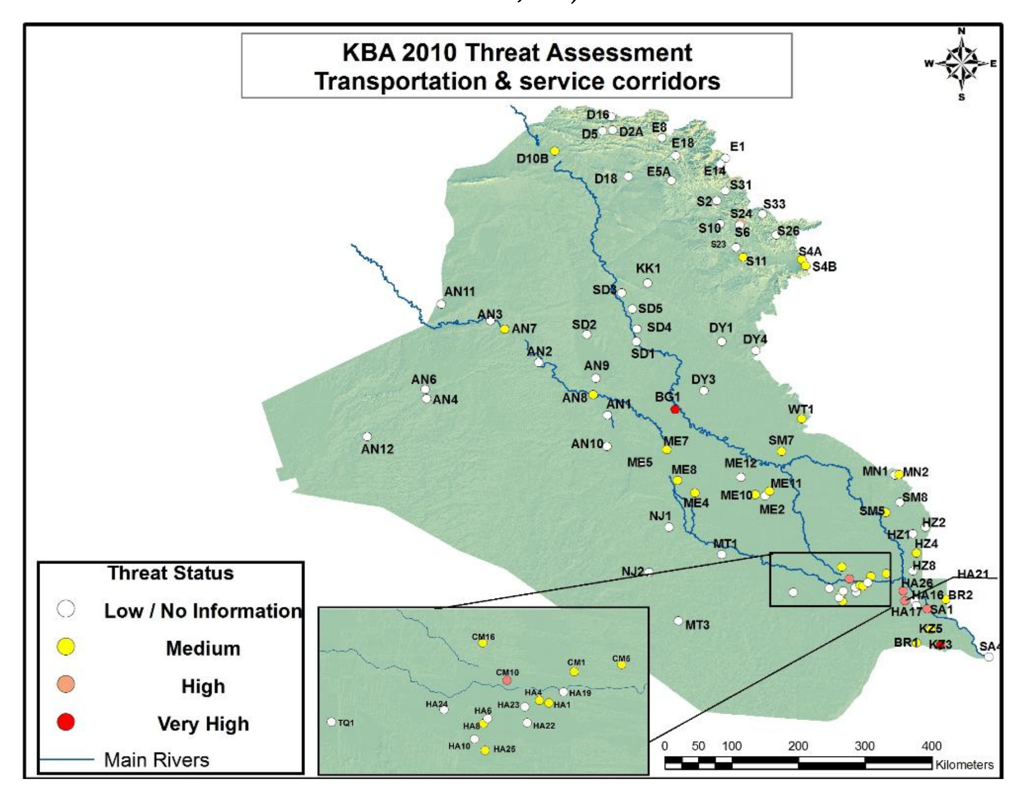


Plate 7: Sites facing Transportation & service corridors threats (development of roads and shipping corridors)

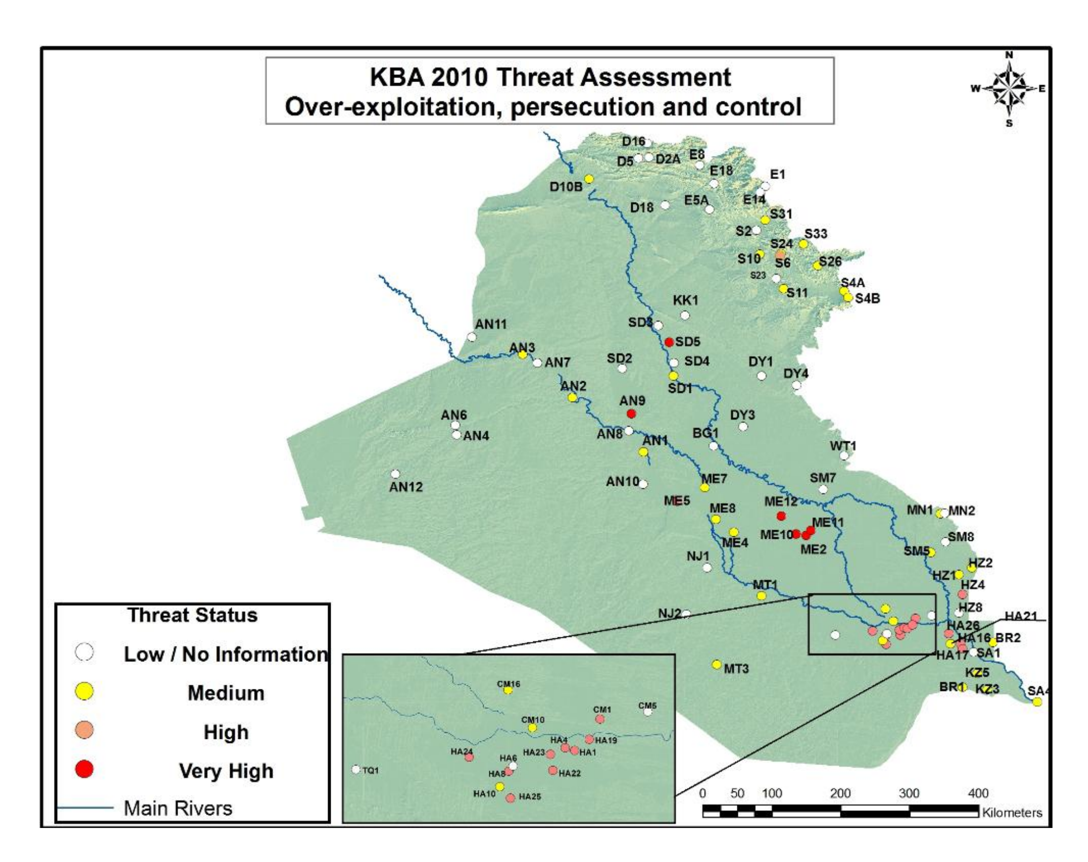


Plate 8: Sites facing Over-exploitation, persecution and control threats (logging, hunting, over-fishing,

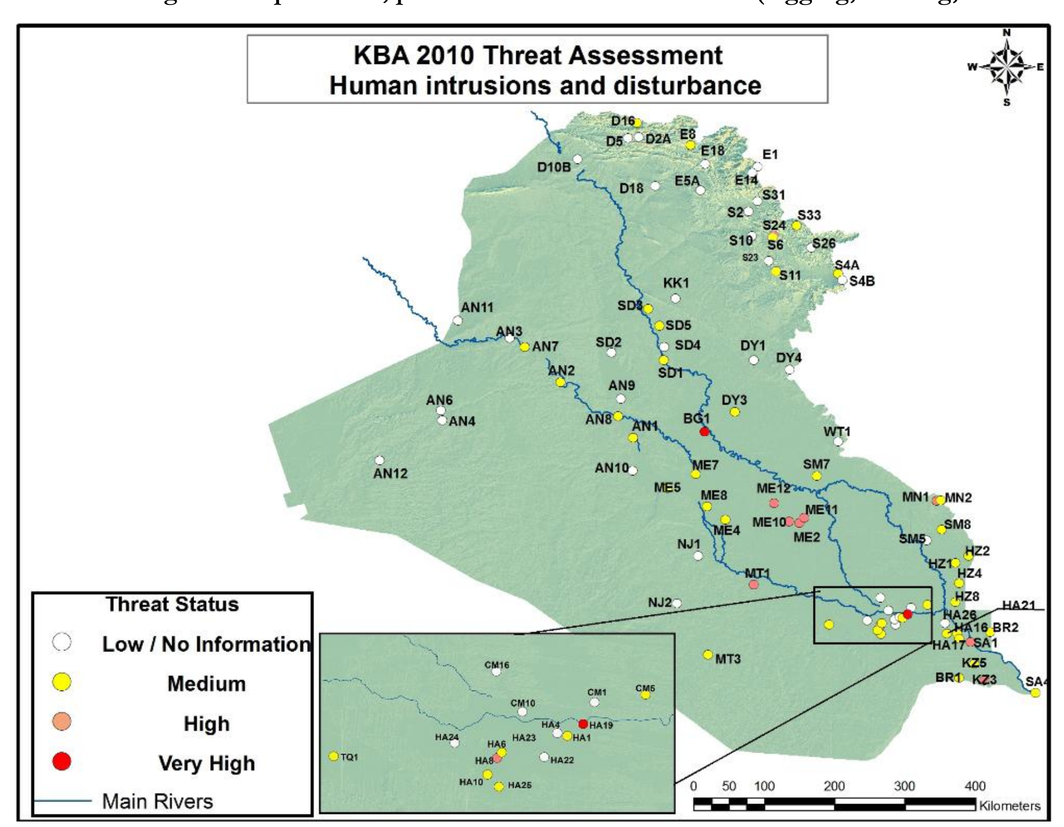


Plate 9: Sites facing Human intrusions and disturbance threats - Effects related to non-consumption of biological resources – recreational activities, war, military exercises, work and other activities

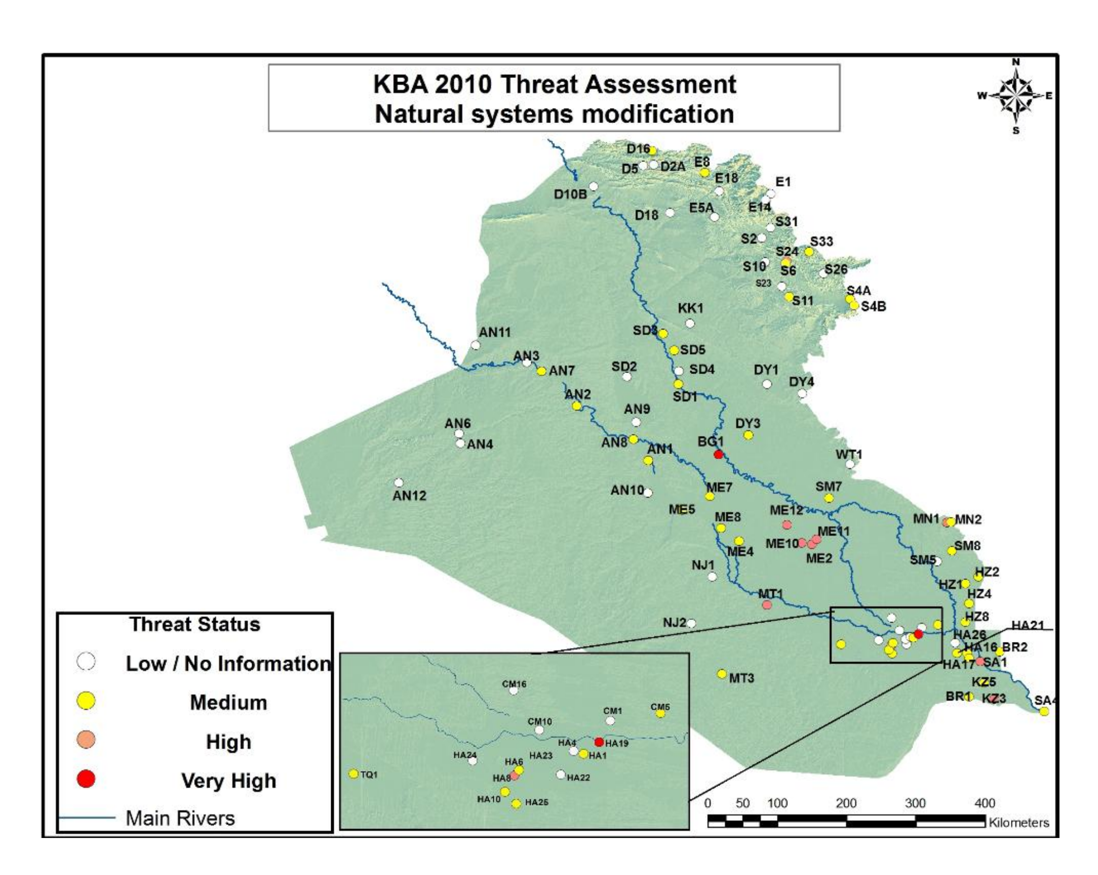


Plate 10: Sites facing Natural systems modification threats (dams and changes water mgmt, filling in wetlands, drainage, dredging, & canalizations)

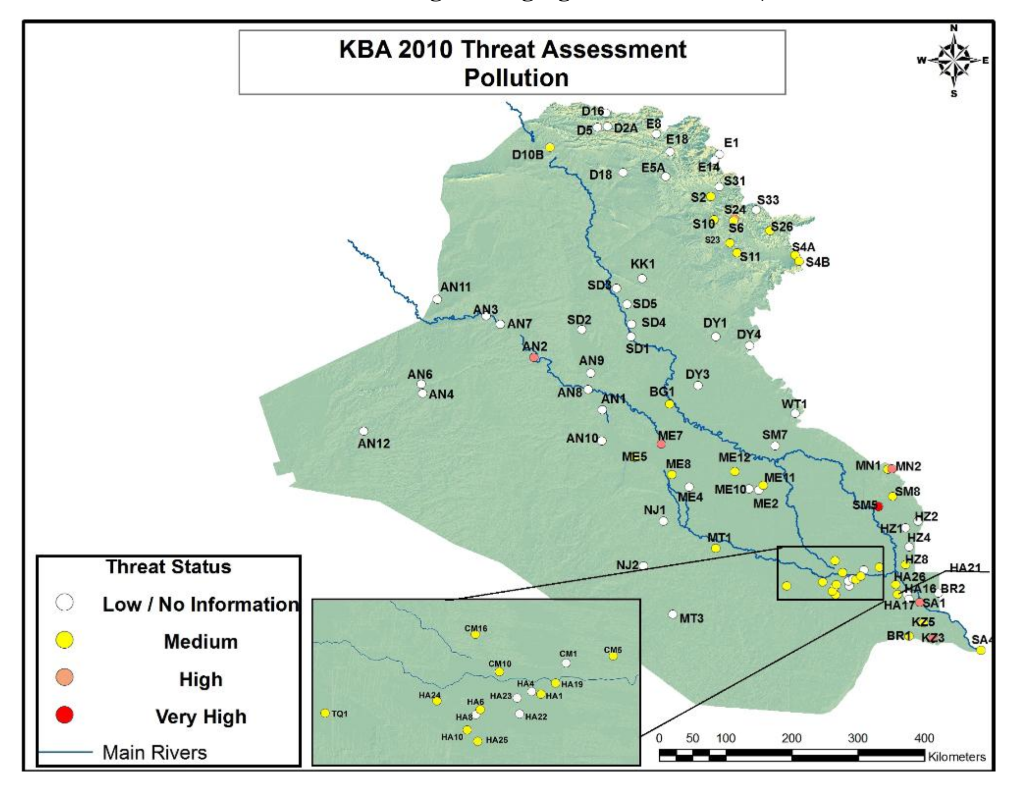


Plate 11: Sites facing Pollution threats (municipal and industrial waste and garbage, noise, air, light, & thermal pollution)

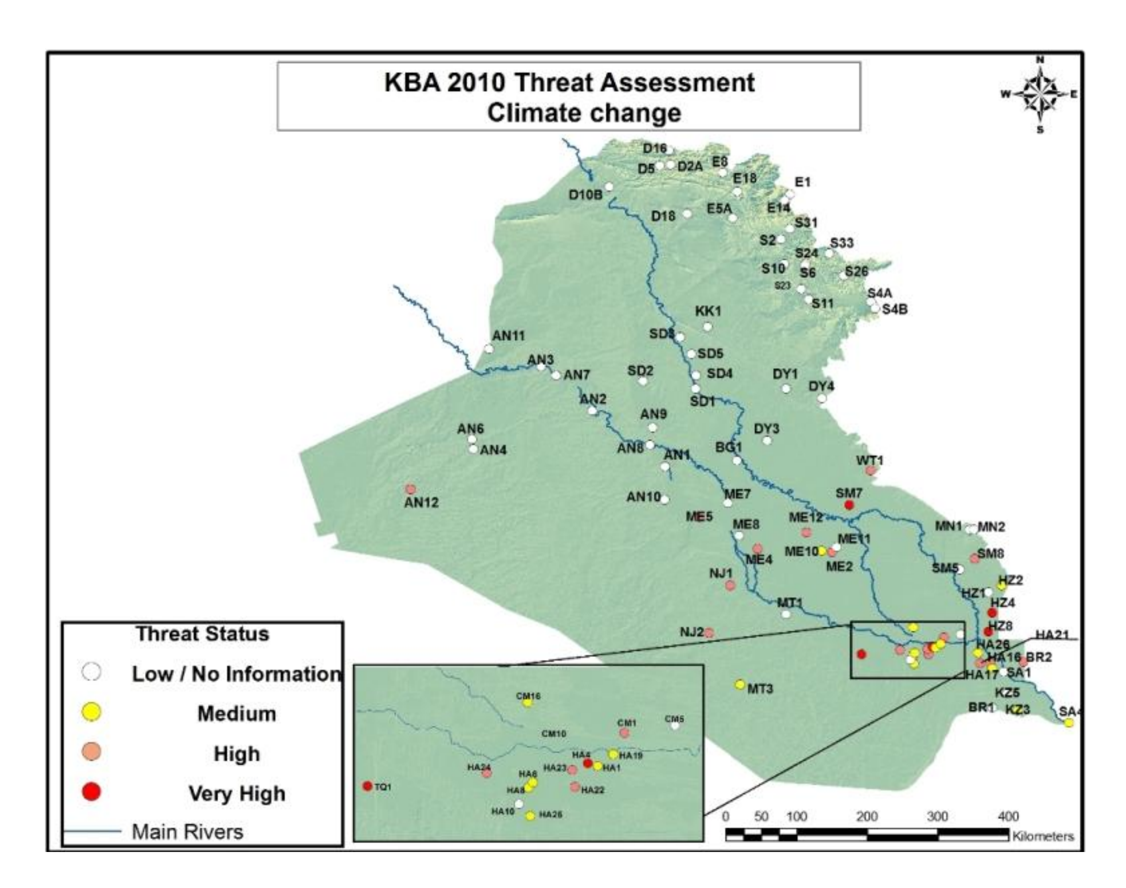


Plate 12: Sites facing Climate change, severe weather, drought, floods Threats

It should be noted that these threat assessments were primarily undertaken during the summer 2010 survey and only represent those threats that the team was able to assess during that period. In addition, the KBA team may not have had access to detailed information about the sites, and these threat assessments should be revised and updated based on additional information and future visits to these sites.

Recommendations on addressing threats to sites

Addressing threats and the need to find real and practical solutions, especially to the long-standing problem of mine fields threatening border areas, will require long-term planning, funding and a cessation of hostilities between Iraq and its neighbors (even in 2010, there were reports of Turkey and Iran laying new mines in the border region). Other areas can produce local solutions by enacting certain restrictions, such as fishing moritoriums (practiced at Darbandikhan (S1) and Dukan (S2)), limitations on hunting (practiced at Barzan (E8) and to a lesser extent in other areas), rules against car washing, and the fencing off of small areas to protect from over-grazing. However, the regional and local governments need to provide much more rigorous support for enforcement. There are several minor anti-littering campaigns, mostly conducted by non-governmental organizations or municipalities, but public compliance is very low and most sites that attract the public for recreation purposes are littered with garbage and

are not provided with appropriate resources for long-term maintenance. Most sites require more signage and facilities for garbage and sewage management. An overall education campaign is needed to change public attitudes and behavior in this regard. Such a campaign should start in the local schools and extend to the general public. In addition, most of Kurdistan's beautiful and easily accessible areas require urgent restoration and remediation. Industrial development such as oil drilling, cement and asphalt factories and gravel mining, must all be subject to environmental impact assessments and be goverened by a set of strong environmental regulations that control and limit pollution to the local environment, as well as the destruction of habitats surrounding local rivers and streams. Hunting is also a major threat to wildlife, and long-term education programs are necessary to educate the locals of the importance of wildlife.

Delineation and prioritization of proposed KBA protected areas

In order to successfully carry out a field survey and biological monitoring within these ecosystems, it is necessary to determine the boundaries of the survey site where potential conservation actions may take place. Consideration must be given to the habitat, range, and size of the local plant and animal populations as well as their habitat requirements, in addition to logistical concerns (such as the ease of access to the site, the number of entry and exit points, and its physical size). This process is known as site delineation.

The following map shows the original Important Bird Areas (IBA) of Iraq with their BirdLife International site codes. This was the starting point for the KBA Project surveys that began in 2005. The map that follows this (Plate 14) shows the original IBA sites overlapped by the new delineations initiated in 2009 and refined and extended in 2010 under the KBA Project. A number of the original IBA sites remain to be surveyed in areas where security is still poor; in other areas, old IBA site delineations have been revised (sometimes reduced in size, and sometimes extended) and a number of new KBA sites have been delineated.

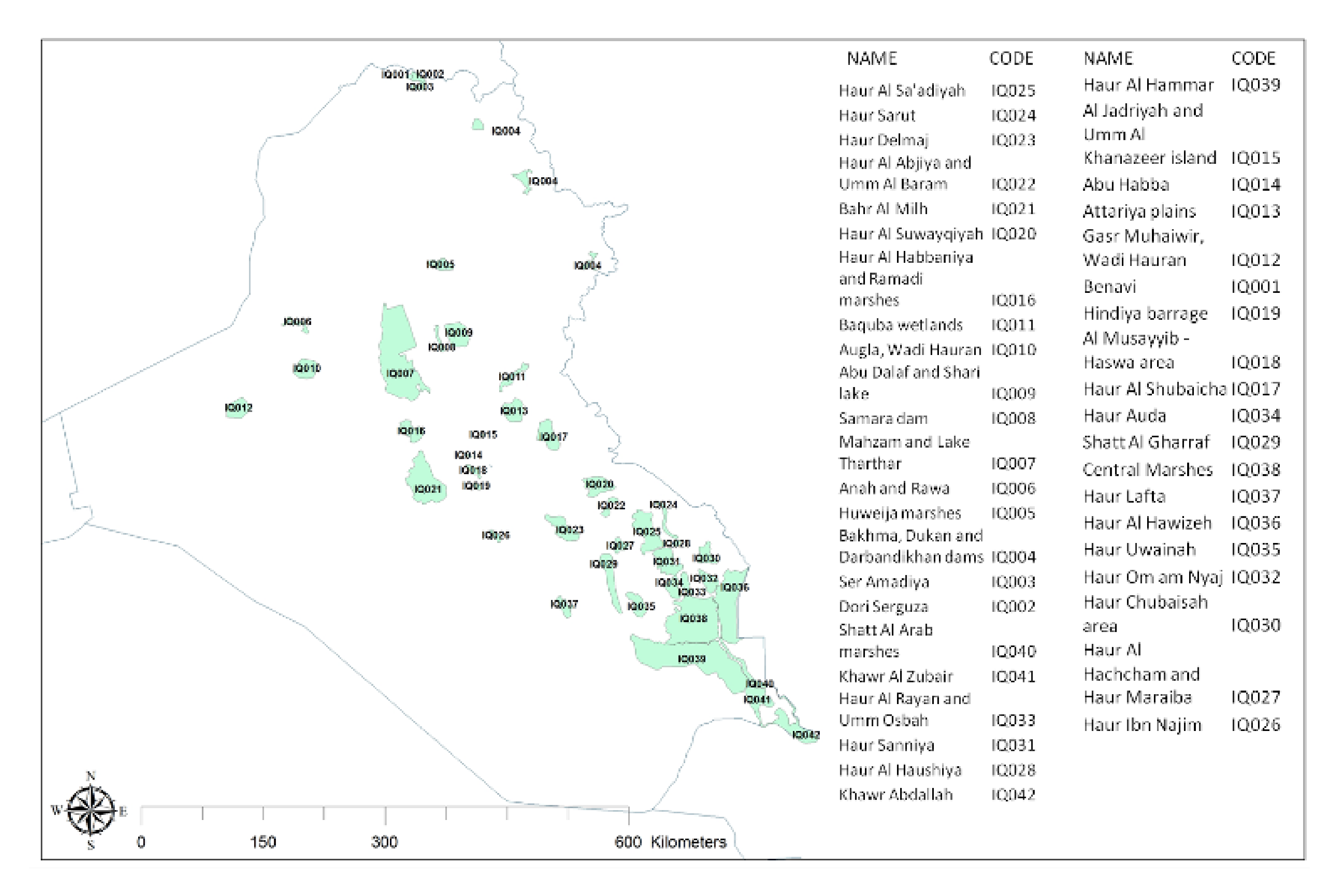


Plate 13: Map of the original Important Bird Areas of Iraq (Birdlife, 2010 based on a map developed at Nature Iraq)

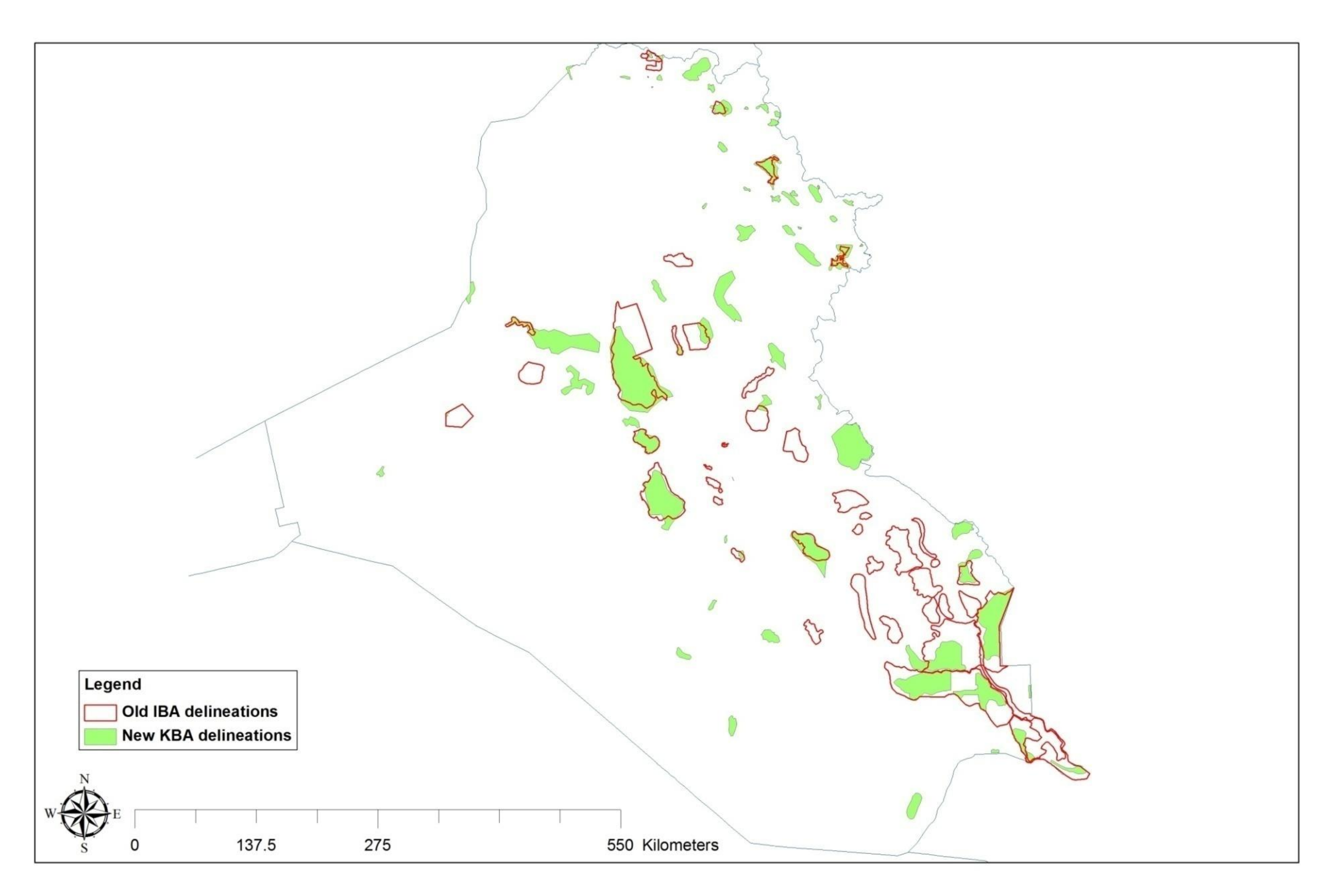


Plate 14: Map showing New 2009/2010 KBA delineations in relation to original Important Bird Areas of Iraq (Nature Iraq, 2010)

The following three maps show a closer examination of the 2009/2010 KBA delineated sites. The KBA team attempted a preliminary delineation of many sites throughout Iraq in 2009. In 2010 the team attempted to further refine these delineations and delineate new priority sites throughout the country. Note in some cases these maps show sites delineated in 2009, but only sites delineated in 2010 are discussed in this report.

It should be noted that not all sites that have been delineated (and shown in these maps) have been confirmed to meet KBA criteria or do not have strong evidence that they meet these criteria. A more comprehensive, multi-year assessment is currently underway to fully document the sites meeting these criteria and prioritize them for conservation action.

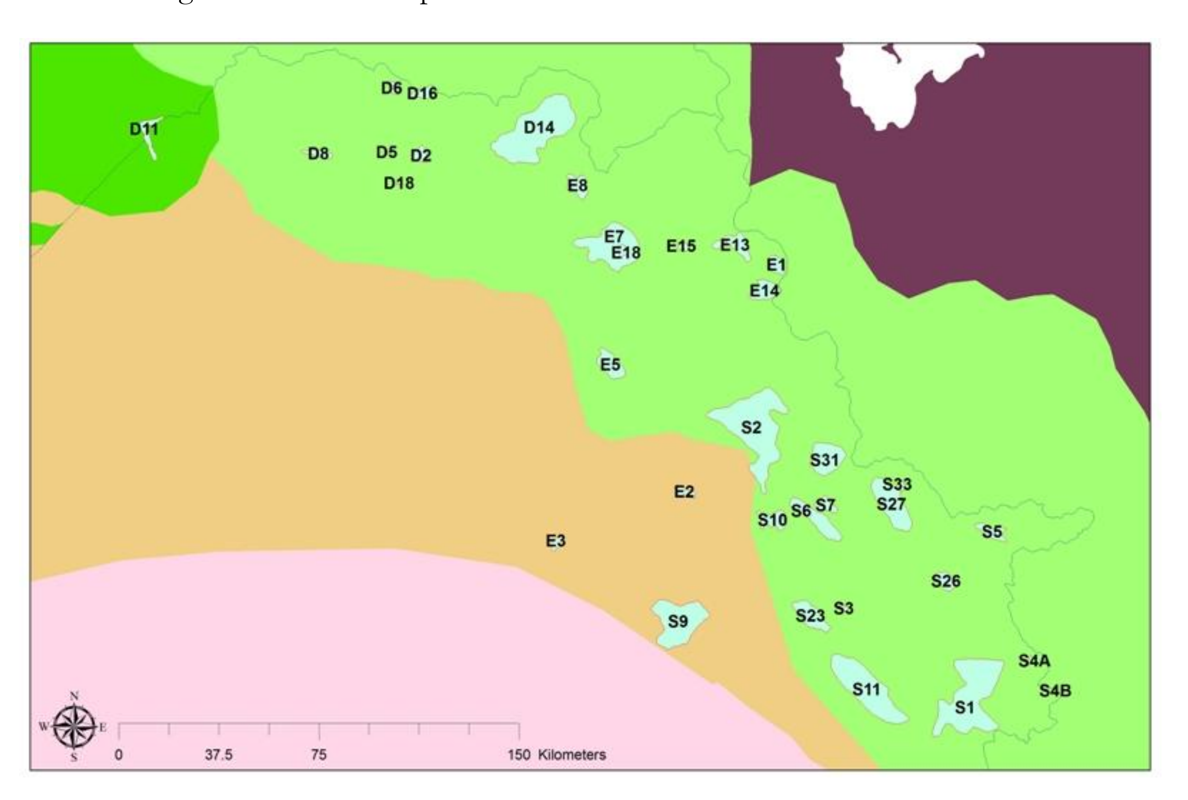


Plate 15: Preliminary Delineation of KBAs in Kurdistan, northern Iraq shown within their ecoregion

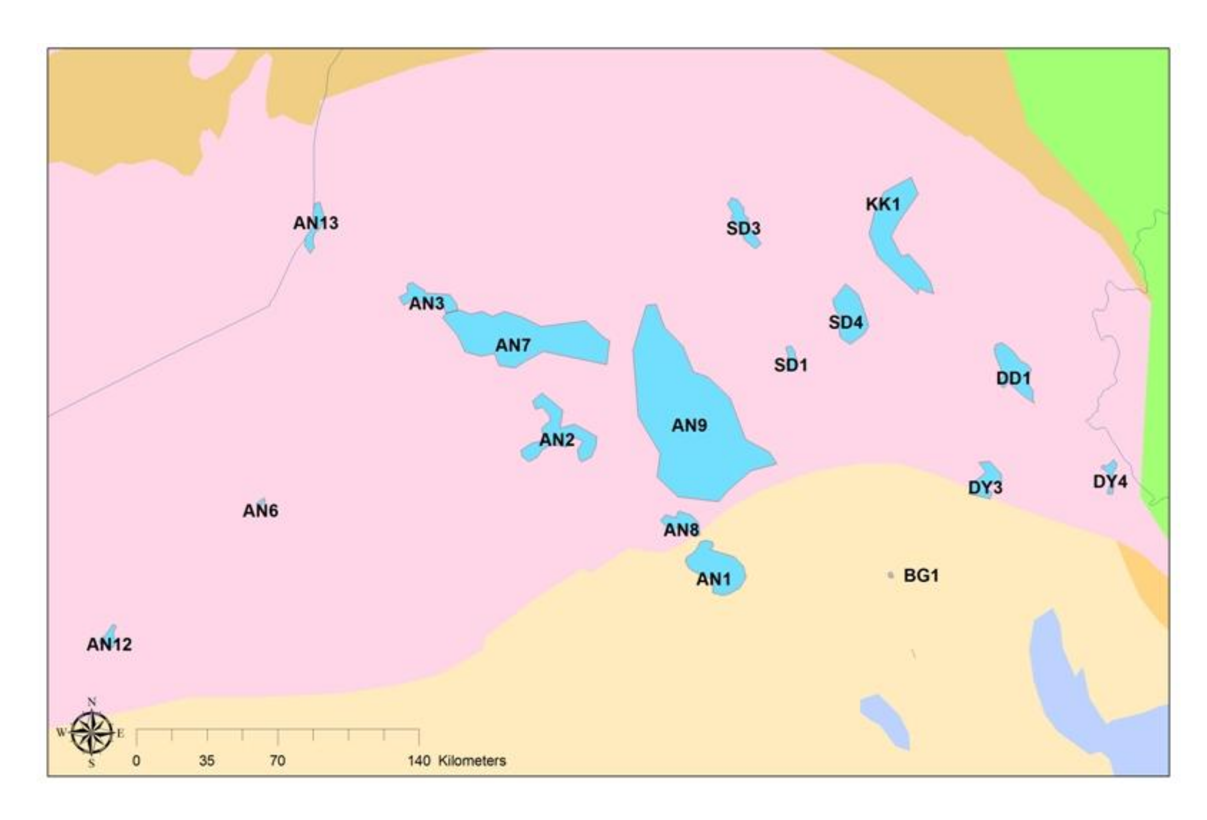


Plate 16: Preliminary Delineation of KBAs in central & western Iraq shown within their ecoregion

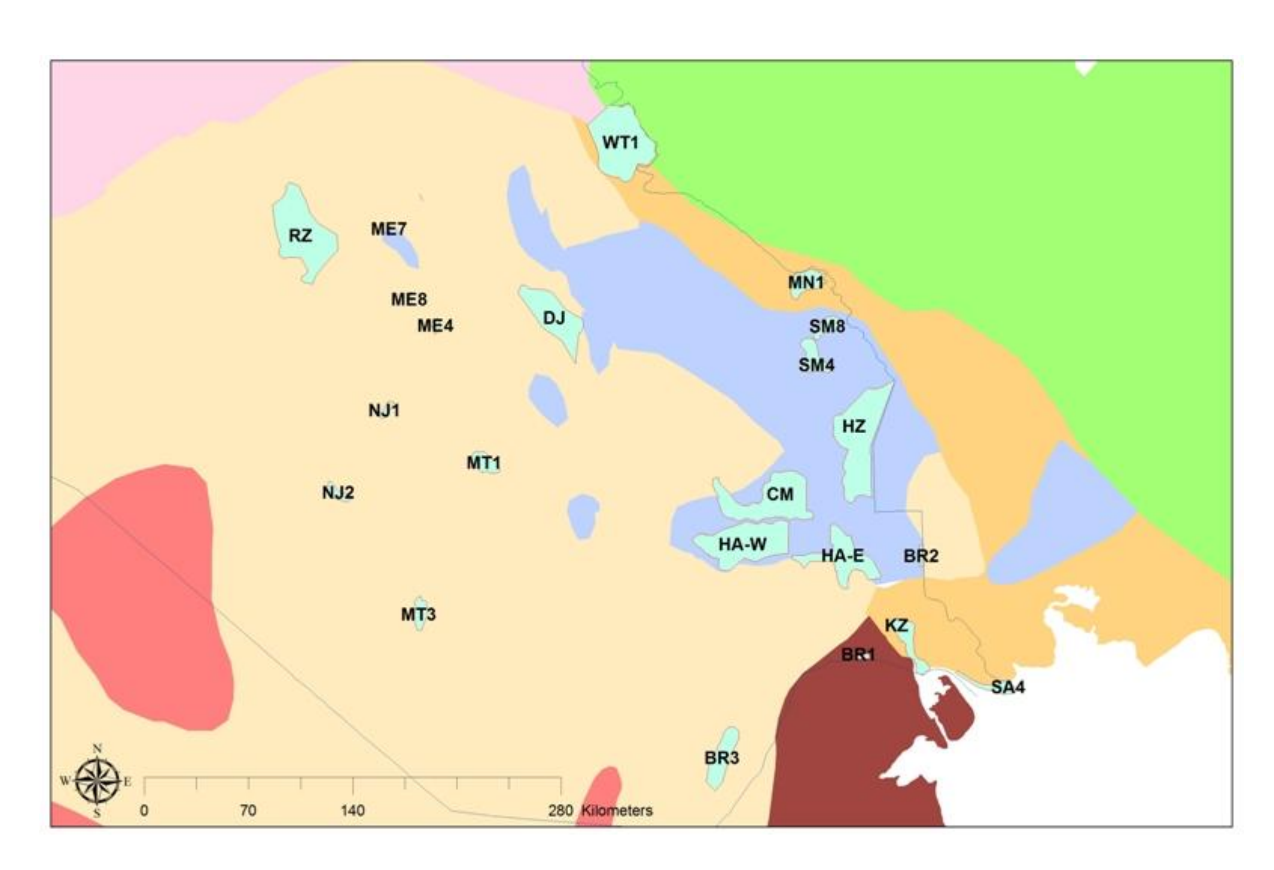


Plate 17: Preliminary Delineation of KBAs in southern Iraq shown within their ecoregion

Site Prioritization

Annex E presents a complete review of criteria findings and scoring for each site in the 2010 surveys. It also provides the area of each delineated site (in hectares), the ecoregion it is associated with, and the percentage of this ecoregion that the KBA covers. Sites were given a weighted score based on each criterion that they met (KBA, IBA, & IPA), but three additional criteria were also considered relevant: Protected Area (PA), Trans-boundary Ecological Corridor (TEC) and High Threat Status (HT). Each score was then added together to form the overall Ecological Value Priority (EVP); this final score was used to prioritize sites. The scores were weighted based on the relative strength of the criteria with a total value of all weighted scores adding up to 1. The following table shows the scoring system that was used in this assessment.

Table 7: Ecological Value Priority (EVP) weighted scoring system

Citeria	Description	EVP Weighted scoring
IBA (Important Bird Area)	As bird surveys in Iraq represent the most extensive and complete biological data on sites, sites that strongly appear to meet the criteria (meeting two or more of the specific IBA Criteria A1, A2, A3, A4i, A4ii, and/or A4iii) received a score of 0.2.	0.2
IBA Potential	Sites that have less evidence that they may meet the criteria (meeting only one IBA Criteria) received a score of 0.15.	0.1
KBA (Key Biodiversity Areas – non-bird species only)	This criterion was used to assess only those sites that met the first KBA Criteria for Vulnerability for other (non-bird) wildlife species. This criteria requires that the site have either have one or more individuals of a critically endangered (CR) or Endangered (EN) species or 30 individuals of a Vulnerable (VU) species) and those sites that met this criteria were given a score of 0.2.	0.2
High Vegetation Richness (HVR)	In the 2010 KBA data, the strongest indication that a site is botanically important is its species richness (number of species) or IPA Criteria B. In the case of the IPA Criteria C, due to the lack of a clear classifications systems for all habitats found in Iraq, only a very broad approached using ecoregions was utilized to evaluate sites based on this critiera but this can only provide a rough and very generalized assessment of habitats and in some areas such as desert, for example the Mesopotamian Shrub Desert (PA1320), there are significant micro-habitats that simply can not be represented in an ecoregion approach. Thus only sites meeting IPA Criteria B were given a score of 0.2.	0.2
Protected Area (PA)	The PA criterion has been used to address the presence in Iraq of existing protective measures to specific areas. This score was given to any site that has some level of protection currently (Barzan (E8) is currently tribally protected from hunting), has been designated for protective status (eg. Hawizeh marshes (HZ) as officially considered a RAMSAR site in Iraq) or for which protective status is planned (e.g. a national park is currently planned in the Central Marshes (CM)). PA sites were given a score of 0.15.	0.15
Trans-boundary	The TEC criterion was added to emphasize sites that occur within border	0.05

Ecological Corridor (TEC)	areas, since ecosystems and their wildlife are crossing (or trying to cross) these borders. Border sites were given a score of 0.1.	
High Treat Status (HT)	All Total Impact scores for every threat that could be evaluated in the field were averaged for all threats resulting in a potential score of 0 (Low or No Threat/No Information) to 9 (Very High threat). As the threat assessment tended to under-report the threats sites actually faced any site that received an average Total Impact score of 4 or above was assigned an HT score of 0.1.	0.1
Total Score		**1**

The following table provides the EVP scores of the sites based on the strength of the criteria assessment shown in the table in Annex E. This assessment is based only on one year of data, and in some cases, the evidence indicating that a site meets specific criteria may not always be very strong or completely accurate. Lastly, some new sites that were visited only by the botany team have been excluded and the scores of large sites have been averaged from the scores received by the individual survey sites.

Table 8: Ecological Value Priority scoring for 2010 KBA Sites organized by ecoregion (Note: EVP scores for large sites with multiple survey sites have been averaged)

Governate	Site Name	Site Code	EVP (Avg)
Zagros Mountains Forest Steppe (PA0446)			
Erbil	Barzan	E8	0.7
Sulaimani	Peramagroon Mt & Homer Qawm and Shadala Valley	S6 & S24	0.7
Sulaimani	Qara Dagh	S11	0.7
Erbil	Bradost Mountain	E18	0.6
Sulaimani	Parazan	S26	0.6
Erbil	Sakran Mt-Choman Reserve	E14	0.55
Sulaimani	Assos Mountain	S32A & B	0.5
Sulaimani	Awesar	S4B	0.45
Dohuk	Ser Amadia	D2A	0.4
Erbil	Doli (Valley) Smaquly	E5A	0.4
Sulaimani	Chami Razan	S10	0.4
Sulaimani	Dukan Lake and Surrounding Area	S2	0.4
Sulaimani	De Lezha	S23	0.4
Erbil	Haji Omran Mountain	E1	0.35
Sulaimani	Ahmed Awa	S4A	0.35
Dohuk	Dure	D16	0.3
Dohuk	Chamanke	D18	0.3
Dohuk	Garagu	D5	0.3
Sulaimani	Darbandikhan Lake and Surrounded Area	S1	0.3
Sulaimani	Gmo Mountain	S33	0.3
Sulaimani	Hazarmerd	S34	0.2
Sulaimani	Sargalu	S7	0.2
Sulaimani	Maidan Area	S22	0.1
Sulaimani	Qadr Karam	S30	0.1
Erbil	Bahraka	E11	0
Middle East Steppe (PA0812)			
Dohuk	Mosul lake	D10	0.5

Governate	Site Name	Site Code	EVP (Avg)
Erbil	Altun Kopri	E3	0.2
Tigris-Euphrates alluvial salt marsh (PA0906)			
ThiQar & Basrah	Central marshes	CM1, CM5, CM10, & CM16	0.475
Missan & Basrah	Hawizeh marshes	HZ1, HZ2, HZ4, HZ8, & HZ9	0.4
Babylon	Hindiya Barrage	ME7	0.3
Basrah	Euphrates & Tigris Junction	SA1	0.3
Basrah	East Hammar	HA16, HA17, HA21, & HA26	0.275
ThiQar	West Hammar	HA1, HA4, HA6, HA8, HA19, HA22, HA23, HA24, & HA25 (HA3, & HA28 removed because of the group, these two sites were not surveyed for birds)	0.23
Missan	Sinnaaf Area, Western	SM5	0.2
Missan	Teeb	SM8	0.2
Basrah	Kteibaan	BR2	0.05
Wasit	Shuweicha Marsh	SM7	0
Eastern Mediterranean conifer-sclerophyllous-broadleaf forest (PA1207)			
Dohuk	Fishkhaboor	D11	0.1
Arabian Desert and East Sahero-Arabian Xeric Shrublands (PA1303)			
Qadissiya, Najaf & Karbala	Dalmaj Marsh	ME10, ME11, & ME12	0.5
Baghdad	Jadriyah and Umm Al Khanazeer Island	BG1	0.5
Najaf	Wadi Al-W'eir	NJ1	0.4
Karbala	Razzaza Lake	ME5	0.3
Basrah	Kharanij	BR3	0.3
Anbar	Habbaniya Lake	AN1	0.2
Basrah	Lehais	BR4	0.2
Qadissiyah	Basroogiya	ME13	0.2
Babil	Ibn Najm	ME4	0.2
Babil	North IbnNajm	ME8	0.2
Muthanna	Sawa Lake	MT1	0.2
Najaf	Sh'eeb Abu-Talha	NJ2	0.2
Thi Qar	Tell Al-Laham	TQ2	0.2
Muthanna	Salman	MT3	0.1
Thi Qar	Suwaibaat, South	TQ1	0.1
Karbala	Al-Taar	KR1	0
Karbala	'Ein Al-Tamr	KR2	0
Mesopotamian Shrub Desert (PA1320)			
Salah ad Din	Tharthaar Lake & Dhebaeji Field	SD2	0.4
Wasit	Jazman (Zurbatia)	WT1	0.25
Anbar	Rutba and Al Massad Gazelles Reserve	AN12	0.2
Anbar	Rahaliya and Razzaza Lake	AN10	0.2
Anbar	Haditha Wetlands & Baghdadi	AN2	0.2
Anbar	Anah & Rawa	AN3	0.2
Anbar	Al Nekheab District Oases - Al Hussayniyah	AN4	0.2
Anbar	Qadissiya or Haditha Dam	AN7	0.2
Anbar	Hawijat Albu Dheab and Al Ramadi Marshes	AN8	0.2
Diyala	Attariya Plains	DY3	0.2

Governate	Site Name	Site Code	EVP (Avg)
Kirkuk	Huweija Marshes & Beagi	KK1	0.2
Salah ad Din	Mahzam	SD3	0.2
Salah ad Din	Abu Dalaf & Shari Depression	SD4	0.2
Salah ad Din	Jallet Albu Ageel	SD5	0.2
Anbar	Tharthar Lake, Western Edge	AN9	0.2
Diyala	Himreen lake	DY1	0.2
Anbar	Sabkhat Albu Garis	AN11	0.1
Anbar	Gasr Muhaiwir	AN6	0.1
Diyala	Mandli	DY4	0.1
Salah ad Din	Samarra dam & Wetlands	SD1	0
Persian Gulf desert and semi-desert (PA1323)			
Basrah	Jabal Senam	BR1	0.25
South Iran Nubo-Sindian desert and semi-desert (PA1328)			
Missan	Teeb oasis & Zubaidaat	MN1 & MN2	0.325
Basrah	Ras Al-Beesha (Fao)	SA4	0.2
Basrah	Khor Az Zubayr	KZ3, KZ4, KZ5, KZ6	0.15

***Scores for HA3, & HA28 were removed before calculating the average EVP because these two sites were only partially surveyed in 2010.**

Based on the table above, sites in the Zagros Mountains Forest Steppe (PA0446) ecoregion with some of the highest EVP values are: Barzan (E8), Homer Qawm, Shadala Valley & Peramagroon Mt (S24, S6), Qara Dagh (S11), Bradost Mountain (E18); Parazan (S26); Sakran Mt-Choman Reserve (E14) and Assos Mt (S32A & B).

Mosul Lake (D10) and Altun Kopri (E3) are the only sites in the Middle East Steppe ecoregion (PA0812) that were surveyed for 2010.

For the Tigris-Euphrates alluvial salt marsh ecoregion (PA0906), some of the top sites include the Hawizeh Marshes (HZ sites), the Central Marshes (CM sites), Hindiya Barrage (ME7), East Hammar and West Hammar (HA Sites).

Fishkhaboor (D11) is the only site in the Eastern Mediterranean conifer-schlerophyllous-broadleaf forest (PA1207) ecoregion.

Some of the top sites in the Arabian Desert and East Sahero-Arabian Xeric Shrublands (PA1303) are Dalmaj Marsh (a Middle Euphrates site), Jadriayah and Umm Al Khanazeer Island in Baghdad (BG1), Wadi Al W'eir (NJ1), Razzaza Lake (ME5) and Kharanij (BR3). These sites were evaluated by two separate teams and in some cases site were not evaluated for plants or for other species. Thus these sites and their level of prioritizations is likely in need of further field work and review.

The key sites in the Mesopotamian Shrub Desert (PA1320) ecoregion were Tharthaar Lake and Dhebaeji Field (SD2) and Jazman (Zurbatia) (WT1); the latter is a transborder area that is close

to both the Zagros Mountains Forest Steppe (PA0446) and the South Iran Nubo-Sindian desert and semi-desert (PA1328) ecoregions. Please note, the Rutba and Al Massad Gazelle Reserve (AN12) was removed from the table above as it is not a "natural" site due to the presence of large enclosures to contain the gazelles. In addition, none of the sites in central and western Iraq were evaluated by a botanical team therefore this lowered the scoring of these sites. Many of the sites in the table above that received an EVP score of 0.2 are likely also important sites for conservation. In addition, these sites have received the fewest survey visits and more work is necessary to fully characterize them.

Jabal Senam (BR1) remains the only site within the Persian Gulf desert and semi-desert (PA1323).

In the South Iran Nubo-Sindian desert and semi-desert (PA1328), the top sites were Teeb oasis & Zubaidaat (MN1 & MN2) and Khor Az Zubayr (KZ sites).

Much of the criteria assessment provided in the site review and reviewed in the table above should still be considered preliminary. This assessment is based only on the 2010 survey data, and in many cases (as was indicated in the shaded area of the table in Annex E), the KBA Project team is still unable to assess all criteria. Data is primarily anecedotal or based on second hand reports for non-bird fauna species; and the IPA criteria assessments were based primarily on criteria B (species richness), as the C criterion (threatened habitats) still considered to be weak if applied country-wide. As stated previously, a multi-year assessment of sites is currently underway to develop a finalized list of top priority sites and complete the criteria assessment based on all existing data.

Protected Areas Program in Iraq

The Strategic Plan of the Convention on Biological Diversity (CBD) to which Iraq is signatory, has 20 targets, organized under five strategic goals. Goal C is focused on the improvement in the status of biodiversity by safeguarding ecosystems, species and genetic diversity. There are several targets under this goal including the following (CBD, 2010):

> ***Target 11***: By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Iraq has yet to clearly define its national targets under the CBD; however, if this target is adopted in Iraq, priority KBA sites will clearly meet the target because they have been identified

for their importance to biodiversity. In addition, the table below summarizes the results from the table in Annex E to provide an overall understanding of how closely the area covered by the 2010 delineated KBA sites achieves Target 11's 17% coverage of terrestrial ecoregions present in Iraq.

Table 9: Ecoregions in Iraq and the % covered by 2010 KBA Delineated Areas

Ecoregion	Ecoregion Code	Area in Iraq (ha)	% Area covered by 2010 KBA Delineated areas
Tigris-Euphrates alluvial salt marsh	PA0906	3017501	18.53%
Mesopotamian Shrub Desert	PA1320	12990700	10.62%
South Iran Nubo-Sindian desert and semi-desert	PA1328	855179	9.04%
Zagros Mountains Forest Steppe	PA0446	3047020	14.10%
Eastern Mediterranean conifer-sclerophyllous-broadleaf forest	PA1207	121204	3.45%
Persian Gulf desert and semi-desert	PA1323	111335	2.62%
Arabian Desert and East Sahero-Arabian Xeric Shrublands	PA1303	19399482	1.95%
Middle East Steppe	PA0812	3791260	1.31%
Eastern Anatolian montane steppe	PA0805	3	0%
Red Sea Nubo-Sindian Tropical Desert and Semi-Desert	PA1325	518925	0%

As can be seen in this table, over 18% (above the 17% target) of the unique and critically-threatened Tigris-Euphrates alluvial salt marsh ecoregion (PA0906) has been delineated, whereas other ecoregions (Eastern Anatolian montaine steppe (PA0805) and Red Sea Nubo-Sindian tropical desert and semi-desert (PA1325)) have not been covered at all; though these represent relatively small areas within Iraq. A much larger ecoregion within Iraq, the Middle East Steppe (PA0812), which has a vulnerable status, has received minor attention (1.31% of 2010 KBA sites were delineated in this ecoregion). Other areas that have also receive less attention are the Arabian Desert and East Sahero-Arabian Xeric Shrublands (PA1303), which has a critical status, and only 1.95% of the 2010 KBA sites were delineated in this ecoregion. In large part, poor security in these areas has been the main reason for the lack of sites and delineated areas within these two ecoregions. Coverage has been good to excellent (beginning to approach the 17% target identified above) in the South Iran Nubo-Sindian desert and semi-desert (PA1328), the Zagros Mountains Forest Steppe (PA0446), the Mesopotamian Shrub Desert (PA1320) and the Tigris-Euphrates alluvial salt marsh (PA0906) as mentioned above.

Recommendations and Next Steps

This report has examined the findings from the 2010 survey Key Biodviersity Areas Project survey effort in southern, central and northern (Kurdistan), Iraq. As the Key Biodiversity Areas program enters its seventh year, the KBA Team is initiating a review of all previous projects since the start of the project effort to create a comprehensive list of high priority sites for conservation in Iraq. This section outlines basic goals, next steps, and recommendations for both the KBA Sites and the KBA Project as a whole.

KBA Sites

Previous reports have listed a number of next steps and recommendations that are site specific. These include education and awareness-raising of local stakeholders (children and adults); restoration activities that physically restore damaged sites; sustainable development initiatives adjacent to and within sites; creation and implementation of rules and regulations that control the use of sites, and enforcement to stop the misuse of sites.

These conservation actions need to be implemented both on the site, regional, and national scale. An example of a site scale action is the formation of Local Conservation Groups (LCGs) at individual sites that are made up of community stakeholders who have personal interests in the conservation and protection of a site. An example of a regional scale action is the enforcement of hunting and fishing regulations across districts affecting multiple sites, or a regional environmental education program focused on teaching children about the importance of preserving local biodiversity. An example of a national scale action is the creation of laws and rules that foster protection of important sites, development of national educational curriculum and teacher training focused on raising awareness about biodiversity, or the implementation of a nation-wide Protected Areas Network and Program.

Many of the sites identified in this report should be the subject of conservation actions by local, regional and/or national government stakeholders. Many of these key sites are also at risk from a variety of threats and at grave risk to further deterioration and loss of their globally significant biodiversity if actions are not taken.

Currently, Iraq has a number of laws and regulations that can be helpful in the management of sites, but these are often poorly enforced. Funds dedicated towards conservation actions are also severly lacking, and it is recommended that more training and financial resources be placed in the hands of local community and government stakeholders to begin a process to develop local

plans specifically focused at site-level management of ecosystems and species for their conservation and sustainable use.

Identification of new KBA sites

It is recommended to continue searching for more potential KBAs as many parts of Iraq still have not been visited. This includes directing the survey effort towards the desert and steppe ecosystems that dominate western and southwestern Iraq. As was stated in Table 9 above, extensive areas within specific ecoregions of the country have not yet been covered and these areas should be priorities for future survey efforts to identify new KBA sites.

A gap analysis would also speed up the process of identifying those areas that should be targeted first. The following map gives an idea of the scope of the country that remains to be surveyed (in blue).

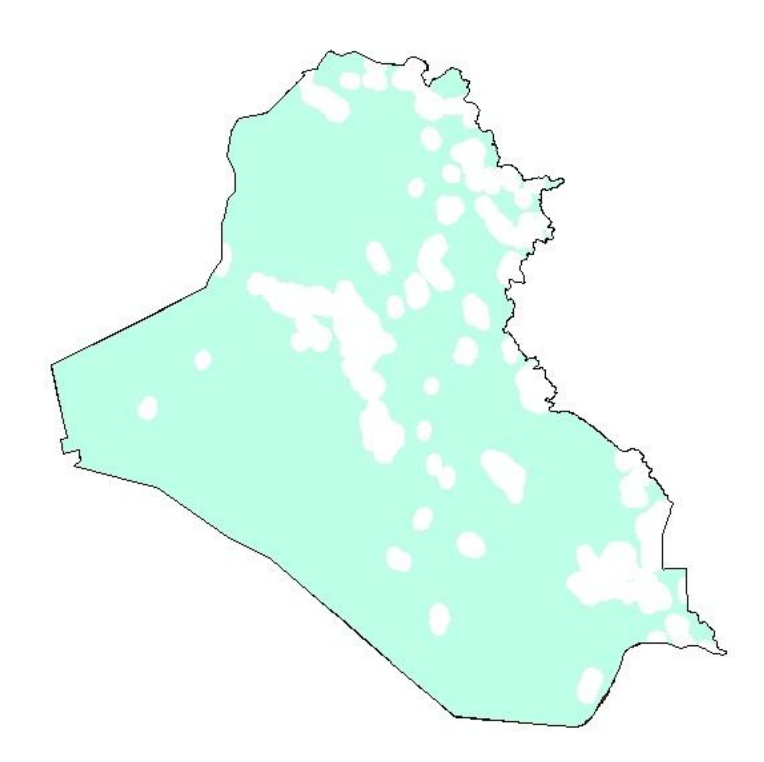


Plate 18: Areas surveyed (including a 10 km buffer) under the KBA Program are shown in white, thus blue represents the unsurveyed areas in Iraq.

In an accurate gap analysis, a vegetation map is needed to help target priority areas. It is also necessary to re-initiate a program to develop a habitat classification system for Iraqi ecosystems. This will greatly assist in the effort to more fully evaluate the Important Plant Areas (IPA) criteria. In addition, both historic and current botany information should be geo-referenced as this will also help to highlight future priority sites. It is important to examine the information on plant distributions (specifically endemics and near endemics) based on the mapping of historical

and current records. Currently, the Royal Botanic Garden Edinburgh is proposing to assist in this effort, and once distibution data becomes available, this will be useful in the effort to complete the flora of Iraq.

Monitoring of high priority sites

Lastly, in terms of the KBA sites themselves, a number of the high priority KBA sites should be the subject of a regular, consistent and long-term monitoring program. They clearly meet KBA Criteria but many of these sites, such as areas in the Mesopotamian marshlands, are facing continual ecological changes and human threats. Others are relatively protected and remain unique refuges for globally threatened species. These sites require further surveys, including expanded survey efforts for different fauna groups, and longer study periods to fully assess and identify all species that are utilizing these sites to understand the role these sites play at global and/or regionallevels.

KBA Program

The KBA Program has been a rapid assessment project and not an indepth survey program. Despite this, the program has been highly successful in identifying globally and/or regionally important sites. The program should be assessed based on its six key objectives, which are as follows.

1. Conduct winter and summer surveys of as many potential KBA sites as possible and evaluate these sites to determine if they meet KBA criteria;
2. Record information on the status of the flora, fauna and overall habitats and threats to these sites;
3. Evaluate these sites to determine if they meet KBA criteria, delineate them and determine their conservation status;
4. Provide advice to the Iraq Ministry of Environment and other Iraqi stakeholders on the future management and restoration of KBA sites;
5. Undertake advocacy efforts that promote the protection, conservation and restoration of KBA sites; and
6. Publish relevant scientific and technical findings in reports and papers in peer-reviewed scientific journals to make the information widely available to stakeholders.

In 2010, Nature Iraq conducted a review of the program itself that evaluated how well these six program objectives have been met and developed a list of recommendations and next steps for the program. Each of these key objectives along with their identified recommendations and next steps are reviewed in the table below:

Table 10: KBA Objectives, Recommendations and Next Steps (Nature Iraq, 2010)

Recommendations	Next Steps
KBA Objective 1: Conduct winter and summer surveys of as many potential KBA sites as possible.	
• Recommendation No. 1: the IMoE should play a more active role in the management of the KBA Project, as well as take on more responsibility for monitoring of key sites. • Recommendation No. 2: A comprehensive review of older KBA data is needed to assess the reliability and properly catalog and organize this data. • Recommendation No. 3: More Kurdistan sites in Summer Surveys should be included for the Dohuk and Erbil Governorates. • Recommendation No. 4: Focus more on visiting new sites to insure that the KBA Program continues to grow, particularly into un-surveyed areas of Iraq. • Recommendation No. 5: More focus of KBA team members on gap analysis and integration of datasets should be undertaken to allow wider application of these techniques to the KBA Program in Iraq.	1) The IMoE should identify a project team and a team manager who can work mjor closely with NI during 2011 to learn all aspects of running the KBA program (including: survey planning, data review & management, and report writing). 2) Restrict surveys to only new sites (or sites that have not yet been fully assessed) identified via gap analysis (this will increasingly require GIS expertise) 3) Return to existing high-priority KBA sites only with clear objectives to gain information that is missing to complete: (a) delineation of the site; (b) threat assessment/conservation status assessment, and/or (c) implement new surveys (e.g. conduct a plant survey in an area that has only received a bird survey or conduct a socio-economy survey at a high priority site). 4) Focus on a priority Kurdistan site with a more intensive Flora and Fauna survey to support a new national park initiative (its goals would be to identify and delineate in a GIS all of the key habitats and obtain socio-economic information on the site and surrounding areas). It should be noted that botany work during 2011 and 2012 may be limited for the KBA due to work being done by the Flora of Iraq (FOI) project. 5) More comprehensive gap analysis methodology should be utilized to locate potentially good survey areas incorporating vegetation maps and geo-referencing of historical data on edemics & globally-threatened species.
KBA Objective 2: Record information on the status of the flora, fauna and overall habitats and threats to these sites.	
• Recommendation No 6: Consistent allocation of staff from partner agencies must occur to make best use of the training and field experience they acquire year to year. • Recommendation No. 7: Field data must be uploaded in a more robust SQL database to ensure integration of all field data from year to year with geographic information system technology that is able to be protected and backed up reliably. • Recommendation No 8: Additional training on databases with an emphasis on basic analysis methods using databases is needed for the KBA Team. • Recommendation No 9: Closer attention to data archiving protocols by Nature Iraq staff is required, with more effort needed to ensure this occurs. Some investigation of how other organizations maintain and archive their data would benefit the Program. • Recommendation No 10: Data analysis of Water Quality data (after a review of data to establish its reliability is accomplished) in cooperation with TRI should be conducted and published. More extensive analysis of year to year trends in water quality, flora	1) Other sectors require additional training and opportunities to gain expert-supported field experience: Mammals and Botany Staff, other sectors (reptiles, amphibians, and insects). 2) A trip to Iran for staff and colleagues involved in Mammal work is recommended. 3) Training in Plant Red-listing is needed. 4) Training in Participatory Rural Appraisal (PRA) methodology is needed for surveying local peoples. 5) Make sure databases are updated including bird and plant lists. 6) More training is needed on setting up and using the databases for data analysis – SQL Database on a dedicated, backed-up server is needed (perhaps through the American University of Iraq-Sulaimani (AUIS)) 7) Archiving a data needs a complete overhaul 8) A review of all old data is needed to salvage data wherever possible and conduct analysis if feasible. 9) More GIS work needs to be integrated with the KBA Program. 10) NI and the Iraq MoE should discuss ways in which the MoE can assist in this step of the KBA process.

Recommendations	Next Steps
and fauna data is needed, particularly in the recovering marshlands to understand how marsh recovery (and set-backs) occurred there between 2005 and the present.	
KBA Objective 3: Evaluate these sites to determine if they meet KBA criteria, delineate them and determine their conservation status.	
• Recommendation No. 11: Proper geographic delineation of all proposed KBA sites in Iraq should be completed as soon as possible, using GIS technology wherever feasible.	1) Refine the list of KBA sites to define existing, high-priority sites and implement evaluation of new sites (Note: In 2011, a full evaluation of all sites is planned). 2) Refine the evaluation of sites based on Important Plant Area (IPA) Criteria (strengthen the application of these criteria). 3) Evaluate old fisheries data to see if it can be used in this effort. 4) Additional mammal training and mammal specific surveys should be implemented to properly assess sites for other non-bird fauna. 5) The IMoE should assist more closely with NI in this step of the KBA process
KBA Objective 4: Provide advice to the Iraqi Ministry of Environment and other Iraqi stakeholders on the future management and restoration of these sites.	
	1. NI should promote the list of KBAs to the IMoE and other stakeholders and distribute the future reports widely. 2. Translation of KBA documents into Arabic and Kurdish from the KBA Program is needed and additional support for this must be identified. 3. Training in management and restoration techniques is needed both at NI and the IMoE – such as management/restoration of wetlands, rangelands, forests and watersheds.
KBA Objective 5: Undertake advocacy efforts to promote the protection, conservation, and restoration of KBA sites.	
• Recommendation No. 12: Nature Iraq should build further on its six years of experience in developing the KBA Program, to undertake advocacy efforts to ensure the conservation management of these key areas. This is essential to the protecting the biological health of the nation.	1. NI should take further steps to support the IMoE in the establishment of Protected Areas legislation, and the establishment of the proposed Mesopotamian Marshlands National Park and other national parks. 2. NI should ensure its advocacy work becomes more publicly known to build local support for these efforts. This can be accomplished through work in stakeholder communities and networks (i.e. town hall meetings, educational events, awareness-raising through public media, etc.).
KBA Objective 6: Publish relevant scientific and technical findings in reports and papers in peer-reviewed scientific journals to make the information widely available to stakeholders.	
• Recommendation No. 13: Reports and papers on KBA results and new findings should be published in peer-reviewed publication, including results related to flora in Iraq that to date is lagging behind the rest of the NI publishing activities. In addition, old data from 2005-2007 should be evaluated and reported on.	To catch up with issues related to the extensive dataset that Nature Iraq has already developed (but underutilized), in the short term staff should attempt to spend less time in the field and more time in the office reporting on NI results. 1) Publishing the findings of the KBA program should be given more emphasis and as has been stated previously during 2011 an assessment is currently underway to review all past data to provide a definitive, prioritized list of key sites visited since the inception of the program. This

Recommendations	Next Steps
	will lead to the development of an atlas of KBAs. 2) Opportunities to speak at more and a greater variety of events should be encouraged with all staff.

KBA Partnership

The KBA Partnership consists of Nature Iraq, the Iraqi Ministry of Environment (under the auspices of the New Eden Group and with financial support from the Italian Ministry of Environment, Land and Sea (IMELS)), and the Kurdistan Commission on the Environment (KCoE). Individual professors and students from different Iraqi universities have also participated in the work of the KBA Project through the years. The ability to conduct extensive and comprehensive country-wide surveys is declining at Nature Iraq due to lack of funding resources. It is important that the IMoE and Iraqi educational institutions play a more active role in both biodiversity monitoring of key sites and the identification of new sites. This effort will require a key process for standardizing, vetting, managing and sharing of data between all the institutions involved.

In 2010, the IMoE attempted to initiate a major biodiversity project that might have greatly assisted in this effort. However, funding was not allocated in 2011, and has yet to meet the country's obligations under the CBD. A large, cross-sectoral program on biodiversity is needed and is a critical if we are to fill the large gaps that remain in our knowledge and protect Iraq's biological diversity.

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Also for more information, please see the following websites:

Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) website: www.aewa.com

BirdLife International (BI) Website: www.birdlife.org

Birds of Oman Website: www.birds of oman.com

Brian Coad Website: www.briancoad.com

Fatbirder website: www.fatbirder.com

IUCN (2010) Red List Website: www.redlist.org

Nature Iraq (NI) Website: www.natureiraq.org

World Wildlife Fund WildFinder Online database of species distributions: gis.wwfus.org/wildfinder/

Annex A: List of birds seen on the KBA Surveys in Iraq in 2010

#	Order	Scientific Name	Common Name	Conservation Status
1	GALLIFORMES	*Alectoris chukar*	Chukar Partridge	
2	GALLIFORMES	*Ammoperdix griseogularis*	See-see Partridge	Biome-Restricted (BR)
3	GALLIFORMES	*Francolinus francolinus*	Black Francolin	
4	GALLIFORMES	*Coturnix coturnix*	Common Quail	
5	ANSERIFORMES	*Anser anser rubrirostris*	Eastern Greylag Goose	Congratory, Waterbirds
6	ANSERIFORMES	*Anser albifrons*	Greater White-fronted Goose	Congratory, Waterbirds
7	ANSERIFORMES	*Anser erythropus*	Lesser White-fronted Goose	Globally Threatened (GT), Congratory, Waterbirds
8	ANSERIFORMES	*Branta ruficollis*	Red-breasted Goose	Globally Threatened (GT)
9	ANSERIFORMES	*Cygnus columbianus bewickii*	Bewick's Swan	Congratory, Waterbird
10	ANSERIFORMES	*Tadorna tadorna*	Common Shelduck	Congratory, Waterbird
11	ANSERIFORMES	*Tadorna ferruginea*	Ruddy Shelduck	Congratory, Waterbird
12	ANSERIFORMES	*Anas strepera*	Gadwall	Congratory, Waterbird
13	ANSERIFORMES	*Anas penelope*	Eurasian Wigeon	Congratory, Waterbird
14	ANSERIFORMES	*Anas platyrhynchos*	Mallard	Congratory, Waterbird
15	ANSERIFORMES	*Anas clypeata*	Northern Shoveler	Congratory, Waterbird
16	ANSERIFORMES	*Anas acuta*	Northern Pintail	Congratory, Waterbird
17	ANSERIFORMES	*Anas querquedula*	Garganey	Congratory, Waterbird
18	ANSERIFORMES	*Anas crecca*	Eurasian Teal	Congratory, Waterbirds
19	ANSERIFORMES	*Marmaronetta angustirostris*	Marbled Duck	Globally Threatened (GT), Congratory, Waterbirds
20	ANSERIFORMES	*Netta rufina*	Red-crested Pochard	Congratory, Waterbirds
21	ANSERIFORMES	*Aythya ferina*	Common Pochard	Congratory, Waterbirds
22	ANSERIFORMES	*Aythya nyroca*	Ferruginous Duck	Globally Threatened (GT)
23	ANSERIFORMES	*Mergellus albellus*	Smew	Congratory, Waterbirds
24	PODICIPEDIFORMES	*Tachybaptus ruficollis*	Little Grebe	Endemic Race (EndR), Congratory, Waterbirds
25	PODICIPEDIFORMES	*Podiceps cristatus*	Great Crested Grebe	Congratory, Waterbirds, Seabird
26	PODICIPEDIFORMES	*Podiceps nigricollis*	Black-necked Grebe	Congratory, Waterbirds, Seabird
27	PHOENOCOPTERIFORMES	*Phoenicopterus roseus*	Greater Flamingo	Congratory, Waterbirds
28	CICONIIFORMES	*Ciconia ciconia*	Western White Stork	Congratory, Waterbirds
29	CICONIIFORMES	*Threskiornis aethiopicus*	African Sacred Ibis	Conservation Concern (CC)
30	CICONIIFORMES	*Plegadis falcinellus*	Glossy Ibis	Congratory, Waterbirds
31	CICONIIFORMES	*Platalea leucorodia*	Eurasian Spoonbill	Conservation Concern (CC), Congratory, Waterbirds
32	CICONIIFORMES	*Botaurus stellaris*	Eurasian Bittern	Conservation Concern (CC), Congratory, Waterbirds
33	CICONIIFORMES	*Ixobrychus minutus*	Little Bittern	Congratory, Waterbirds
34	CICONIIFORMES	*Nycticorax nycticorax*	Black-crowned Night Heron	Congratory, Waterbirds
35	CICONIIFORMES	*Ardeola ralloides*	Squacco Heron	Congratory, Waterbirds
36	CICONIIFORMES	*Bubulcus ibis*	Western Cattle Egret	Congratory, Waterbirds
37	CICONIIFORMES	*Ardea cinerea*	Grey Heron	Congratory, Waterbirds
38	CICONIIFORMES	*Ardea purpurea*	Purple Heron	Congratory, Waterbirds
39	CICONIIFORMES	*Ardea alba*	Western Great Egret	Congratory, Waterbirds
40	CICONIIFORMES	*Egretta garzetta*	Little Egret	Congratory, Waterbirds
41	CICONIIFORMES	*Egretta schistacea*	Indian Reef Heron	Congratory, Waterbirds
42	PELECANIFORMES	*Pelecanus onocrotalus*	Great White Pelican	Congratory, Waterbirds
43	PELECANIFORMES	*Pelecanus crispus*	Dalmatian Pelican	Globally Threatened (GT)
44	PELECANIFORMES	*Phalacrocorax pygmeus*	Pygmy Cormorant	Congratory, Waterbirds
45	PELECANIFORMES	*Phalacrocorax carbo*	Great Cormorant	Congratory, Waterbirds, Seabird
46	PELECANIFORMES	*Anhinga rufa*	African Darter	Conservation Concern (CC), Congratory,

#	Order	Scientific Name	Common Name	Conservation Status
				Waterbirds
47	FALCONIFORMES	*Pernis apivorus*	European Honey Buzzard	Congratory
48	FALCONIFORMES	*Elanus caeruleus*	Black-winged Kite	
49	FALCONIFORMES	*Milvus milvus*	Red Kite	Globally Threatened (GT)
50	FALCONIFORMES	*Milvus migrans*	Black Kite	Congratory
51	FALCONIFORMES	*Gypaetus barbatus*	Lammergeier	
52	FALCONIFORMES	*Neophron percnopterus*	Egyptian Vulture	Globally Threatened (GT)
53	FALCONIFORMES	*Gyps fulvus*	Eurasian Griffon Vulture	Congratory
54	FALCONIFORMES	*Circaetus gallicus*	Short-toed Snake Eagle	Congratory
55	FALCONIFORMES	*Circus aeruginosus*	Western Marsh Harrier	Congratory
56	FALCONIFORMES	*Circus cyaneus*	Hen Harrier	Congratory
57	FALCONIFORMES	*Circus macrourus*	Pallid Harrier	Globally Threatened (GT)
58	FALCONIFORMES	*Circus pygargus*	Montagu's Harrier	
59	FALCONIFORMES	*Accipiter nisus*	Eurasian Sparrowhawk	Congratory
60	FALCONIFORMES	*Buteo buteo vulpinus*	Steppe Buzzard	Congratory
61	FALCONIFORMES	*Buteo rufinus*	Long-legged Buzzard	Congratory
62	FALCONIFORMES	*Aquila clanga*	Greater Spotted Eagle	Globally Threatened (GT)
63	FALCONIFORMES	*Aquila nipalensis*	Steppe Eagle	Congratory
64	FALCONIFORMES	*Aquila heliaca*	Eastern Imperial Eagle	Globally Threatened (GT)
65	FALCONIFORMES	*Aquila chrysaetos*	Golden Eagle	
66	FALCONIFORMES	*Aquila pennata*	Booted Eagle	Congratory
67	FALCONIFORMES	*Aquila fasciatus*	Bonelli's Eagle	
68	FALCONIFORMES	*Falco naumanni*	Lesser Kestrel	Globally Threatened (GT)
69	FALCONIFORMES	*Falco tinnunculus*	Common Kestrel	Congratory
70	FALCONIFORMES	*Falco columbarius*	Merlin	Congratory
71	FALCONIFORMES	*Falco subbuteo*	Eurasian Hobby	Congratory
72	FALCONIFORMES	*Falco cherrug*	Saker Falcon	Globally Threatened (GT)
73	FALCONIFORMES	*Falco peregrinus*	Peregrine Falcon	Congratory
74	FALCONIFORMES	*Falco pelegrinoides*	Barbary Falcon	
75	GRUIFORMES	*Chlamydotis macqueenii*	Macqueen's Bustard	Globally Threatened (GT)
76	GRUIFORMES	*Tetrax tetrax*	Little Bustard	Globally Threatened (GT)
77	GRUIFORMES	*Rallus aquaticus*	Water Rail	Waterbird
78	GRUIFORMES	*Crex crex*	Corncrake	Congratory, Waterbirds
79	GRUIFORMES	*Porzana porzana*	Spotted Crake	Congratory, Waterbirds
80	GRUIFORMES	*Porphyrio porphyrio*	Purple Swamphen	Congratory, Waterbirds
81	GRUIFORMES	*Gallinula chloropus*	Common Moorhen	Congratory, Waterbirds, Seabird
82	GRUIFORMES	*Fulica atra*	Eurasian Coot	Congratory, Waterbirds
83	GRUIFORMES	*Grus grus*	Common Crane	Congratory, Waterbirds
84	CHARADRIIFORMES	*Burhinus oedicnemus*	Eurasian Stone-curlew	Congratory, Waterbirds
85	CHARADRIIFORMES	*Himantopus himantopus*	Black-winged Stilt	Congratory, Waterbirds, Seabird
86	CHARADRIIFORMES	*Recurvirostra avosetta*	Pied Avocet	Congratory, Waterbirds
87	CHARADRIIFORMES	*Vanellus vanellus*	Northern Lapwing	Congratory, Waterbirds
88	CHARADRIIFORMES	*Vanellus spinosus*	Spur-winged Lapwing	Congratory, Waterbirds
89	CHARADRIIFORMES	*Vanellus indicus*	Red-wattled Lapwing	Congratory, Waterbirds
90	CHARADRIIFORMES	*Vanellus leucurus*	White-tailed Lapwing	Biome-Restricted (BR), Congratory, Waterbirds
91	CHARADRIIFORMES	*Pluvialis squatarola*	Grey Plover	Congratory, Waterbirds
92	CHARADRIIFORMES	*Charadrius hiaticula*	Common Ringed Plover	Congratory, Waterbirds
93	CHARADRIIFORMES	*Charadrius dubius*	Little Ringed Plover	Congratory, Waterbirds
94	CHARADRIIFORMES	*Charadrius alexandrinus*	Kentish Plover	Congratory, Waterbirds
95	CHARADRIIFORMES	*Charadrius leschenaultii*	Greater Sand Plover	Biome-Restricted (BR), Congratory, Waterbirds
96	CHARADRIIFORMES	*Gallinago gallinago*	Common Snipe	Congratory, Waterbirds
97	CHARADRIIFORMES	*Limosa limosa*	Black-tailed Godwit	Globally Threatened (GT)
98	CHARADRIIFORMES	*Numenius arquata*	Eurasian Curlew	Congratory, Waterbirds
99	CHARADRIIFORMES	*Tringa erythropus*	Spotted Redshank	Congratory, Waterbirds
100	CHARADRIIFORMES	*Tringa totanus*	Common Redshank	Congratory, Waterbirds
101	CHARADRIIFORMES	*Tringa stagnatilis*	Marsh Sandpiper	Congratory, Waterbirds

#	Order	Scientific Name	Common Name	Conservation Status
102	CHARADRIIFORMES	*Tringa nebularia*	Common Greenshank	Congratory, Waterbirds
103	CHARADRIIFORMES	*Tringa ochropus*	Green Sandpiper	Congratory, Waterbirds
104	CHARADRIIFORMES	*Tringa glareola*	Wood Sandpiper	Congratory, Waterbirds
105	CHARADRIIFORMES	*Xenus cinereus*	Terek Sandpiper	Congratory, Waterbirds
106	CHARADRIIFORMES	*Actitis hypoleucos*	Common Sandpiper	Congratory, Waterbirds
107	CHARADRIIFORMES	*Arenaria interpres*	Ruddy Turnstone	Congratory, Waterbirds
108	CHARADRIIFORMES	*Calidris alba*	Sanderling	Congratory, Waterbirds
109	CHARADRIIFORMES	*Calidris minuta*	Little Stint	Congratory, Waterbirds
110	CHARADRIIFORMES	*Calidris ferruginea*	Curlew Sandpiper	Congratory, Waterbirds
111	CHARADRIIFORMES	*Calidris alpina*	Dunlin	Congratory, Waterbirds
112	CHARADRIIFORMES	*Philomachus pugnax*	Ruff	Congratory, Waterbirds
113	CHARADRIIFORMES	*Cursorius cursor*	Cream-coloured Courser	Biome-Restricted (BR), Congratory, Waterbirds
114	CHARADRIIFORMES	*Glareola pratincola*	Collared Pratincole	Congratory, Waterbirds
115	CHARADRIIFORMES	*Chroicocephalus genei*	Slender-billed Gull	Congratory, Waterbirds, Seabird
116	CHARADRIIFORMES	*Chroicocephalus ridibundus*	Common Black-headed Gull	Congratory, Waterbirds, Seabird
117	CHARADRIIFORMES	*Larus ichthyaetus*	Great Black-headed Gull	Congratory, Waterbirds, Seabird
118	CHARADRIIFORMES	*Larus canus*	Common Gull	Congratory, Waterbirds, Seabird
119	CHARADRIIFORMES	*Larus michahellis*	Yellow-legged Gull	Congratory, Waterbirds, Seabird
120	CHARADRIIFORMES	*Larus armenicus*	Armenian Gull	Waterbird, Seabirds
121	CHARADRIIFORMES	*Gelochelidon nilotica*	Gull-billed Tern	Congratory, Waterbirds, Seabird
122	CHARADRIIFORMES	*Hydroprogne caspia*	Caspian Tern	Congratory, Waterbirds, Seabird
123	CHARADRIIFORMES	*Sterna bergii*	Swift Tern	Congratory, Waterbirds, Seabird
124	CHARADRIIFORMES	*Sternula albifrons*	Little Tern	Congratory, Waterbirds, Seabird
125	CHARADRIIFORMES	*Sterna hirundo*	Common Tern	Congratory, Waterbirds, Seabird
126	CHARADRIIFORMES	*Sterna repressa*	White-cheeked Tern	Congratory, Waterbirds, Seabird
127	CHARADRIIFORMES	*Chlidonias hybrida*	Whiskered Tern	Congratory, Waterbirds
128	CHARADRIIFORMES	*Chlidonias leucopterus*	White-winged Tern	Congratory, Waterbirds
129	CHARADRIIFORMES	*Pterocles alchata*	Pin-tailed Sandgrouse	
130	CHARADRIIFORMES	*Pterocles senegallus*	Spotted Sandgrouse	Biome-Restricted (BR)
131	CHARADRIIFORMES	*Larus sp*	Gull sp.	
132	COLUMBIFORMES	*Columba livia*	Rock Dove	
133	COLUMBIFORMES	*Columba palumbus*	Common Woodpigeon	
134	COLUMBIFORMES	*Streptopelia turtur*	European Turtle Dove	
135	COLUMBIFORMES	*Streptopelia decaocto*	Eurasian Collared Dove	
136	COLUMBIFORMES	*Stigmatopelia senegalensis*	Laughing Dove	
137	PSITTACIFORMES	*Psittacula krameri*	Rose-ringed Parakeet	
138	CUCULIFORMES	*Cuculus canorus*	Common Cuckoo	
139	STRIGIFORMES	*Otus scops*	Eurasian Scops Owl	
140	STRIGIFORMES	*Bubo bubo*	Eurasian Eagle Owl	
141	STRIGIFORMES	*Strix aluco*	Tawny Owl	
142	STRIGIFORMES	*Athene noctua*	Little Owl	
143	STRIGIFORMES	*Asio flammeus*	Short-eared Owl	
144	CAPRIMULGIFORMES	*Caprimulgus aegyptius*	Egyptian Nightjar	Biome-Restricted (BR)
145	APODIFORMES	*Tachymarptis melba*	Alpine Swift	
146	APODIFORMES	*Apus apus*	Common Swift	
147	APODIFORMES	*Apus pallidus*	Pallid Swift	
148	APODIFORMES	*Apus affinis*	Little Swift	
149	CORACIFORMES	*Coracias benghalensis*	Indian Roller	
150	CORACIFORMES	*Coracias garrulus*	European Roller	Globally Threatened (GT)

#	Order	Scientific Name	Common Name	Conservation Status
151	CORACIFORMES	*Halcyon smyrnensis*	White-throated Kingfisher	
152	CORACIFORMES	*Alcedo cristata*	Common Kingfisher	
153	CORACIFORMES	*Ceryle rudis*	Pied Kingfisher	
154	CORACIFORMES	*Merops persicus*	Blue-cheeked Bee-eater	
155	CORACIFORMES	*Merops apiaster*	European Bee-eater	Congratory
156	CORACIFORMES	*Upupa epops*	Eurasian Hoopoe	
157	PICIFORMES	*Dendrocopos minor*	Lesser Spotted Woodpecker	
158	PICIFORMES	*Dendrocopos medius*	Middle Spotted Woodpecker	
159	PICIFORMES	*Dendrocopos syriacus*	Syrian Woodpecker	
160	PICIFORMES	*Picus viridis*	European Green Woodpecker	
161	PASSERIFORMES	*Oenanthe leucopyga*	White-crowned Black Wheatear	
162	PASSERIFORMES	*Lanius collurio*	Red-backed Shrike	
163	PASSERIFORMES	*Lanius isabellinus*	Daurian Isabelline Shrike	
164	PASSERIFORMES	*Lanius phoenicuroides*	Turkestan Isabelline Shrike	
165	PASSERIFORMES	*Lanius minor*	Lesser Grey Shrike	
166	PASSERIFORMES	*Lanius pallidirostris*	Steppe Grey Shrike	
167	PASSERIFORMES	*Lanius meridionalis*	Southern Grey Shrike	
168	PASSERIFORMES	*Lanius senator*	Woodchat Shrike	
169	PASSERIFORMES	*Lanius nubicus*	Masked Shrike	Biome-Restricted (BR)
170	PASSERIFORMES	*Oriolus oriolus*	Eurasian Golden Oriole	
171	PASSERIFORMES	*Garrulus glandarius*	Eurasian Jay	
172	PASSERIFORMES	*Pica pica*	Eurasian Magpie	
173	PASSERIFORMES	*Pyrrhocorax pyrrhocorax*	Red-billed Chough	
174	PASSERIFORMES	*Pyrrhocorax graculus*	Yellow-billed Chough	
175	PASSERIFORMES	*Corvus monedula*	Western Jackdaw	
176	PASSERIFORMES	*Corvus frugilegus*	Rook	
177	PASSERIFORMES	*Corvus cornix*	Hooded Crow	
178	PASSERIFORMES	*Corvus capellanus*	Mesopotamian Crow	Endemic Race (EndR)
179	PASSERIFORMES	*Corvus ruficollis*	Brown-necked Raven	Biome-Restricted (BR)
180	PASSERIFORMES	*Corvus corax*	Northern Raven	
181	PASSERIFORMES	*Hypocolius ampelinus*	Hypocolius	Endemic (End???)
182	PASSERIFORMES	*Poecile lugubris*	Sombre Tit	
183	PASSERIFORMES	*Parus major*	Great Tit	
184	PASSERIFORMES	*Cyanistes caeruleus*	Eurasian Blue Tit	
185	PASSERIFORMES	*Alaemon alaudipes*	Greater Hoopoe-Lark	Biome-Restricted (BR)
186	PASSERIFORMES	*Melanocorypha calandra*	Calandra Lark	
187	PASSERIFORMES	*Melanocorypha bimaculata*	Bimaculated Lark	
188	PASSERIFORMES	*Ammomanes deserti*	Desert Lark	Biome-Restricted (BR)
189	PASSERIFORMES	*Calandrella brachydactyla*	Greater Short-toed Lark	
190	PASSERIFORMES	*Calandrella rufescens*	Lesser Short-toed Lark	
191	PASSERIFORMES	*Galerida cristata*	Crested Lark	
192	PASSERIFORMES	*Lullula arborea*	Woodlark	
193	PASSERIFORMES	*Alauda arvensis*	Eurasian Skylark	
194	PASSERIFORMES	*Pycnonotus leucotis*	White-eared Bulbul	Biome-Restricted (BR)
195	PASSERIFORMES	*Riparia riparia*	Sand Martin	Congratory
196	PASSERIFORMES	*Hirundo rustica*	Barn Swallow	Congratory
197	PASSERIFORMES	*Cecropis daurica*	Red-rumped Swallow	
198	PASSERIFORMES	*Delichon urbicum*	Common House Martin	
199	PASSERIFORMES	*Cettia cetti*	Cetti's Warbler	
200	PASSERIFORMES	*Aegithalos caudatus*	Long-tailed Tit	
201	PASSERIFORMES	*Phylloscopus trochilus*	Willow Warbler	
202	PASSERIFORMES	*Phylloscopus collybita*	Common Chiffchaff	
203	PASSERIFORMES	*Phylloscopus sindianus*	Mountain Chiffchaff	
204	PASSERIFORMES	*Phylloscopus orientalis*	Eastern Bonelli's Warbler	
205	PASSERIFORMES	*Acrocephalus griseldis*	Basra Reed Warbler	Globally Threatened

#	Order	Scientific Name	Common Name	Conservation Status
				(GT),Endemic (End), Restricted Range (RR), Biome-Restricted (BR)
206	PASSERIFORMES	*Acrocephalus arundinaceus*	Great Reed Warbler	
207	PASSERIFORMES	*Acrocephalus stentoreus*	Clamorous Reed Warbler	
208	PASSERIFORMES	*Acrocephalus menanopogon*	Moustached Warbler	
209	PASSERIFORMES	*Acrocephalus schoenobaenus*	Sedge Warbler	
210	PASSERIFORMES	*Iduna pallida*	Eastern Olivaceous Warbler	
211	PASSERIFORMES	*Hippolais languida*	Upcher's Warbler	Biome-Restricted (BR)
212	PASSERIFORMES	*Cisticola juncidis*	Zitting Cisticola	
213	PASSERIFORMES	*Prinia gracilis*	Graceful Prinia	
214	PASSERIFORMES	*Turdoides altirostris*	Iraq Babbler	Endemic (End), Restricted Range (RR), Biome-Restricted (BR)
215	PASSERIFORMES	*Turdoides huttoni*	Afgan Babbler	
216	PASSERIFORMES	*Sylvia atricapilla*	Eurasian Blackcap	
217	PASSERIFORMES	*Sylvia borin*	Garden Warbler	
218	PASSERIFORMES	*Sylvia nisoria*	Barred Warbler	
219	PASSERIFORMES	*Sylvia curruca*	Lesser Whitethroat	
220	PASSERIFORMES	*Sylvia crassirostris*	Eastern Orphean Warbler	
221	PASSERIFORMES	*Sylvia communis*	Common Whitethroat	
222	PASSERIFORMES	*Sylvia mystacea*	Menetries's Warbler	Biome-Restricted (BR)
223	PASSERIFORMES	*Troglodytes troglodytes*	Winter Wren	
224	PASSERIFORMES	*Sitta europaea*	Eurasian Nuthatch	
225	PASSERIFORMES	*Sitta neumayer*	Western Rock Nuthatch	Biome-Restricted (BR)
226	PASSERIFORMES	*Sitta tephronota*	Eastern Rock Nuthatch	Biome-Restricted (BR)
227	PASSERIFORMES	*Tichodroma muraria*	Wallcreeper	Biome-Restricted (BR)
228	PASSERIFORMES	*Sturnus vulgaris*	Common Starling	
229	PASSERIFORMES	*Turdus merula*	Eurasian Blackbird	
230	PASSERIFORMES	*Turdus viscivorus*	Mistle Thrush	
231	PASSERIFORMES	*Erithacus rubecula*	European Robin	
232	PASSERIFORMES	*Luscinia svecica*	Bluethroat	
233	PASSERIFORMES	*Luscinia luscinia*	Thrush Nightingale	
234	PASSERIFORMES	*Luscinia megarhynchos*	Common Nightingale	
235	PASSERIFORMES	*Irania gutturalis*	White-throated Robin	Biome-Restricted (BR)
236	PASSERIFORMES	*Cercotrichas galactotes*	Rufous-tailed Scrub Robin	
237	PASSERIFORMES	*Phoenicurus ochruros*	Western Black Redstart	
238	PASSERIFORMES	*Phoenicurus phoenicuroides*	Eastern Black Redstart	
239	PASSERIFORMES	*Phoenicurus phoenicurus*	Common Redstart	
240	PASSERIFORMES	*Saxicola rubetra*	Whinchat	
241	PASSERIFORMES	*Saxicola rubicola*	European Stonechat	
242	PASSERIFORMES	*Saxicola maurus*	Siberian Stonechat	
243	PASSERIFORMES	*Oenanthe isabellina*	Isabelline Wheatear	
244	PASSERIFORMES	*Oenanthe oenanthe*	Northern Wheatear	
245	PASSERIFORMES	*Oenanthe xanthoprymna*	Kurdistan Wheatear	Biome-Restricted (BR)
246	PASSERIFORMES	*Oenanthe chrysopygia*	Red-tailed Wheatear	Biome-Restricted (BR)
247	PASSERIFORMES	*Oenanthe pleschanka*	Pied Wheatear	Biome-Restricted (BR)
248	PASSERIFORMES	*Oenanthe melanoleuca*	Eastern Black-eared Wheatear	
249	PASSERIFORMES	*Oenanthe deserti*	Desert Wheatear	Biome-Restricted (BR)
250	PASSERIFORMES	*Oenanthe lugens*	Eastern Mourning Wheatear	Biome-Restricted (BR)
251	PASSERIFORMES	*Oenanthe leucopyga*	White-crowned Wheatear	
252	PASSERIFORMES	*Oenanthe finschii*	Finsch's Wheatear	Biome-Restricted (BR)
253	PASSERIFORMES	*Oenanthe albonigra*	Hume's Wheatear	Biome-Restricted (BR)
254	PASSERIFORMES	*Monticola saxatilis*	Rufous-tailed Rock Thrush	
255	PASSERIFORMES	*Monticola solitarius*	Blue Rock Thrush	

#	Order	Scientific Name	Common Name	Conservation Status
256	PASSERIFORMES	*Muscicapa striata*	Spotted Flycatcher	
257	PASSERIFORMES	*Cinclus cinclus*	White-throated Dipper	
258	PASSERIFORMES	*Passer domesticus*	House Sparrow	
259	PASSERIFORMES	*Passer hispaniolensis*	Spanish Sparrow	
260	PASSERIFORMES	*Passer moabiticus*	Dead Sea Sparrow	Biome-Restricted (BR)
261	PASSERIFORMES	*Passer montanus*	Eurasian Tree Sparrow	
262	PASSERIFORMES	*Carpospiza brachydactyla*	Pale Rockfinch	
263	PASSERIFORMES	*Petronia petronia*	Rock Sparrow	
264	PASSERIFORMES	*Gymnoris xanthocollis*	Yellow-throated Sparrow	
265	PASSERIFORMES	*Prunella collaris*	Alpine Accentor	Biome-Restricted (BR)
266	PASSERIFORMES	*Prunella modularis*	Dunnock	
267	PASSERIFORMES	*Motacilla flava*	Western Yellow Wagtail (includes all races)	Congratory
268	PASSERIFORMES	*Motacilla flava feldegg*	Black-headed Wagtail	Congratory
269	PASSERIFORMES	*Motacillia citreola*	Citrine Wagtail	
270	PASSERIFORMES	*Motacilla cinerea*	Grey Wagtail	
271	PASSERIFORMES	*Motacilla alba*	White Wagtail	
272	PASSERIFORMES	*Anthus campestris*	Tawny Pipit	
273	PASSERIFORMES	*Anthus pratensis*	Meadow Pipit	
274	PASSERIFORMES	*Anthus trivialis*	Tree pipit	
275	PASSERIFORMES	*Anthus cervinus*	Red-throated Pipit	
276	PASSERIFORMES	*Anthus spinoletta*	Water Pipit	Biome-Restricted (BR)
277	PASSERIFORMES	*Fringilla coelebs*	Common Chaffinch	
278	PASSERIFORMES	*Serinus pusillus*	Red-fronted Serin	
279	PASSERIFORMES	*Carduelis chloris*	European Greenfinch	
280	PASSERIFORMES	*Carduelis spinus*	Eurasian Siskin	
281	PASSERIFORMES	*Carduelis carduelis*	European Goldfinch	
282	PASSERIFORMES	*Carduelis cannabina*	Common Linnet	
283	PASSERIFORMES	*Bucanetes githagineus*	Trumpeter Finch	Biome-Restricted (BR)
284	PASSERIFORMES	*Rhodospiza obsoletus*	Desert Finch	Biome-Restricted (BR)
285	PASSERIFORMES	*Emberiza calandra*	Corn Bunting	
286	PASSERIFORMES	*Emberiza leucocephalos*	Pine Bunting	
287	PASSERIFORMES	*Emberiza cia*	Rock Bunting	
288	PASSERIFORMES	*Emberiza semenowi*	Smyrna Bunting	Globally Threatened (GT)
289	PASSERIFORMES	*Emberiza hortulana*	Ortolan Bunting	
290	PASSERIFORMES	*Emberiza melanocephala*	Black-headed Bunting	Biome-Restricted (BR)
291	PASSERIFORMES	*Emberiza schoeniclus*	Common Reed Bunting	

Annex B: List of plants seen on the KBA Surveys in Iraq in 2010

#	Family	Scientific Name	Citations
1	Acanthaceae	*Acanthus dioscoridis L.*	Fl Iranica 24. (1966)
2	Aceraceae	*Acer monspessulanum L.*	Fl Iraq 4, 1. (1980)
3	Adiantaceae	*Adiantum capillus-veneris L.*	Fl Iraq 2. (1966)
4	Adiantaceae	*Cheilanthes persica*	Fl Iraq 2. (1966)
5	Algea	*Anisosciadium lanatum*	
6	Algea	*Chara sp.*	
7	Amaryllidaceae	*Ixilirion tataricum*	Fl Iraq 8. (1985)
8	Anacardiaceae	*Pistacia eurycarpa*	Fl Iraq 4, 1. (1980)
9	Anacardiaceae	*Pistacia khinjuk Stocks*	Fl Iraq 4, 1. (1980)
10	Anacardiaceae	*Rhus coriaria L.*	Fl Iraq 4, 1. (1980)
11	Apocynaceae	*Nerium oleander L.*	Fl Iraq 4, 1. (1980)
12	Araliaceae	*Hedera helix L.*	Fl Iraq 4, 1. (1980)
13	Aristolochiaceae	*Aristolochia bottae*	Fl Iraq 4, 2. (1980)
14	Aristolochiaceae	*Aristolochia mororum*	
15	Aristolochiaceae	*Aristolochia paecilantha*	Fl Iraq 4, 2. (1980)
16	Asclepiadaceae	*Fagonia L.*	Fl Iraq 4, 1. (1980)
17	Aspleniaceae	*Ceterach officinarum*	Fl Iraq 2. (1966)
18	Boraginaceae	*Alkanna kotschyana.*	
19	Boraginaceae	*Anchusa italica*	Fl Iranica 48. (1967)
20	Boraginaceae	*Anchusa strigosa*	Fl Iranica 48. (1967)
21	Boraginaceae	*Asperugo procumbens L.*	Fl Iranica 48. (1967)
22	Boraginaceae	*Cynoglossum creticum*	Fl Iranica 48. (1967)
23	Boraginaceae	*Echium italicum L.*	Fl Iranica 48. (1967)
24	Boraginaceae	*Myosotis L.*	
25	Boraginaceae	*Myosotis refracta*	Fl Iranica 48. (1967)
26	Boraginaceae	*Myosotis sparsiflora*	Fl Iranica 48. (1967)
27	Boraginaceae	*Nonnea caspica*	Fl Iranica 48. (1967)
28	Boraginaceae	*Onosma albo-roseum*	Fl Iranica 48. (1967)
29	Boraginaceae	*Onosma albo-roseum var. albo-roseum*	Fl Iranica 48. (1967)
30	Boraginaceae	*Onosma rostellatum*	Fl Iranica 48. (1967)
31	Boraginaceae	*Onosma sericea.*	
32	Boraginaceae	*Onosma sp.*	
33	Boraginaceae	*Polycarpea repens*	Fl Iranica 48. (1967)
34	Boraginaceae	*Rindera lanata*	Fl Iranica 48. (1967)
35	Boraginaceae	*Salsola kali L.*	
36	Boraginaceae	*Solenanthus stamineus*	Fl Iranica 48. (1967)
37	Boraginaceae	*Symphytum kurdicum*	Fl Iranica 48. (1967)
38	Caesalpinaceae	*Caesalpinia bonduc*	Fl Iraq 3. (1974)
39	Caesalpinaceae	*Prosopis farcta*	Fl Iraq 3. (1974)
40	Campanulaceae	*Asyneuma amplexicaule*	Fl Iranica 13. (1965)
41	Campanulaceae	*Asyneuma sp.*	
42	Campanulaceae	*Campanula mardinensis*	Fl Iranica 13. (1965)
43	Campanulaceae	*Campanula propinqna*	
44	Campanulaceae	*Campanula retrorsa*	Fl Iranica 13. (1965)
45	Campanulaceae	*Campanula sp.*	
46	Campanulaceae	*Campanula strigosa.*	
47	Campanulaceae	*Legousia falcata*	Fl Iranica 13. (1965)
48	Campanulaceae	*Legousia sp.*	
49	Campanulaceae	*Legousia speculum-veneris*	Fl Iranica 13. (1965)
50	Campanulaceae	*Michauxia lavigata.*	
51	campanulaceae	*Michauxia nuda*	
52	Campanulaceae	*Michauxia tchihatchewii.*	
53	Campanulaceae	*Zeugandra iranica.*	
54	Capparaceae	*Capparis spinosa L.*	Fl Iraq 4, 1. (1980)

#	Family	Scientific Name	Citations
55	Caryophyllacea	*Agrostemma githago.*	
56	Caryophyllaceae	*Arenaria L.*	
57	Caryophyllaceae	*Caryophyllaceae Juss.*	
58	Caryophyllaceae	*Cerastium dichotomum.*	
59	Caryophyllaceae	*Cerastium inflatum Link.*	Zohary Fl Iraq. (1950)
60	Caryophyllaceae	*Cerastium sp*	
61	Caryophyllaceae	*Daphne mucronata Royle*	Fl Iraq 4, 1. (1980)
62	Caryophyllaceae	*Dianthus pendulus Boiss.*	Zohary Fl Iraq. (1950)
63	Caryophyllaceae	*Dianthus strictus Banks 7 Sol.*	Zohary Fl Iraq. (1950)
64	Caryophyllaceae	*Gypsophila sp.*	
65	Caryophyllaceae	*Silene aegyptiaca (L.) L.f.*	Zohary Fl Iraq. (1950)
66	Caryophyllaceae	*Silene aucheriana Boiss.*	Zohary Fl Iraq. (1950)
67	Caryophyllaceae	*Silene longipetala Vent.*	Zohary Fl Iraq. (1950)
68	Caryophyllaceae	*Silene odontopetala Fenzl.*	Zohary Fl Iraq. (1950)
69	Caryophyllaceae	*Silene sefidiana.*	
70	Caryophyllaceae	*Silene sp.*	
71	Caryophyllaceae	*Silene vulgaris*	
72	Caryophyllaceae	*Silene vulgaris.*	
73	Caryophyllaceae	*Stellaria media (L.) Vill.*	Zohary Fl Iraq. (1950)
74	Caryophyllaceae	*Vaccaria grandiflora.*	
75	Caryophyllaceae	*Velezia rigida L.*	Zohary Fl Iraq. (1950)
76	Cerotophyllaceae	*Cleome amblyocarpa Barr. & Murb.*	Fl Iraq 4, 2. (1980)
77	Cerotophyllaceae	*Cornulaca monocantha Chenopodiaceae*	Fl Iraq 4, 2. (1980)
78	Cerotophyllaceae	*Emex spinosus (L.) Campd.*	Fl Iraq 4, 2. (1980)
79	Cerotophyllaceae	*Najas marina L.*	Fl Iraq 4, 2. (1980)
80	Cerotophyllaceae	*Nymphoides indica*	Fl Iraq 4, 2. (1980)
81	Charyophyllaceae	*Vaccaria pyramidata.*	
82	Charyophyllaceae	*Vaccaria sp.*	
83	Chenopodiaceae	*Anabasis setifera*	
84	Chenopodiaceae	*Anisosciadium lanatum. Umbelliferae*	
85	Chenopodiaceae	*Anthemis tinctoria L.*	
86	Chenopodiaceae	*Artemisia herba alba. Compositae*	
87	Chenopodiaceae	*Asphodelus tenuifolius.*	
88	Chenopodiaceae	*Calligonum polygonoides L.*	
89	Chenopodiaceae	*Diplotaxis harra (Forrsk.) Boiss.*	
90	Chenopodiaceae	*Gymnarrhena Desf.*	
91	Chenopodiaceae	*Helianthemum ledifolium (L.) Mill.*	
92	Chenopodiaceae	*Heliotropium ramossissimum (Lehm.) DC.*	
93	Chenopodiaceae	*Lemna minor L.*	Fl Iranica 172. (1997)
94	Chenopodiaceae	*Moltkiopsis ciliata (Forssk.) I.M.Johnston*	
95	Chenopodiaceae	*Rhazya stricta Decne.*	
96	Chenopodiaceae	*Salsola imbricata Chenopodiaceae*	
97	Chenopodiaceae	*Vallisneria spiralis L.*	Fl Iranica 172. (1997)
98	Cistaceae	*Achillea fragrantissima. Compositae*	Fl Iraq 4, 1. (1980)
99	Cistaceae	*Fumana arabica (L.) Spach*	Fl Iraq 4, 1. (1980)
100	Cistaceae	*Helianthemum salicifolium (L.) Mill.*	Fl Iraq 4, 1. (1980)
101	Cistaceae	*Helianthemum sp*	
102	Compositae	*Achillea eriophora.*	
103	Compositae	*Achillea filipendulina Boiss. & Buhse*	Fl Iranica 158. (1986)
104	Compositae	*Achillea sp.*	
105	Compositae	*Anchusa L.*	
106	Compositae	*Anthemis altissima L.*	Fl Iranica 158. (1986)
107	Compositae	*Anthemis sp.*	
108	Compositae	*Artemisia L.*	
109	Compositae	*Calendula L.*	
110	Compositae	*Carduus pycnocephalus L.*	Fl. Iranica 139A . (1979)

#	Family	Scientific Name	Citations
111	Compositae	*Carthamus curdicus Hanelt*	Fl Iranica 139b. (1980)
112	Compositae	*Carthamus oxyacantha M.B.*	Fl Iranica 139b. (1980)
113	Compositae	*Centaurea bruguierana (DC.) Hand.-Mzt.*	Fl Iranica 139b. (1980)
114	Compositae	*Centaurea longipedunculata Schultz-Bip. ex Boiss.*	Fl Iranica 139b. (1980)
115	Compositae	*Centaurea solstitialis L.*	Fl Iranica 139b. (1980)
116	Compositae	*Centaurea sp*	
117	Compositae	*Centaurea triumfettii All.*	Fl Iranica 139b. (1980)
118	Compositae	*Cichorium intybus L.*	Fl. Iranica 122. (1977)
119	Compositae	*Cirsium sp.*	
120	Compositae	*Compositae Giseke*	
121	Compositae	*Cousinia inflata Boiss. & Hausskn.*	Fl. Iranica 90. (1972)
122	Compositae	*Cousinia mobayenii*	
123	Compositae	*Cousinia odontolepis DC.*	Fl. Iranica 90. (1972)
124	Compositae	*Cousinia rhaphiostegia.*	
125	Compositae	*Cousinia sp*	
126	Compositae	*Crepis alpina L.*	Fl. Iranica 122. (1977)
127	Compositae	*Crepis capillaris*	
128	Compositae	*Crepis L.*	
129	Compositae	*Crupina crupinastrum (Moris) Vis.*	Fl Iranica 139b. (1980)
130	Compositae	*Echinops sp.*	
131	Compositae	*Fagonia glutinosa Del.*	
132	Compositae	*Filago pyramidata L.*	Fl Iranica 145. (1980)
133	Compositae	*Gundelia tournefortii L.*	Fl Iranica 145. (1980)
134	Compositae	*Haplophyllum buxbaumii (Poir.) G.Don*	
135	Compositae	*Haplophyllum tuberculatum (Forssk.) A. Juss.*	
136	Compositae	*Helianthemum lippii (L.) Dum.-Cours.*	
137	Compositae	*Helichrysum sp*	
138	Compositae	*Heliotropium L.*	Fl Iranica 139b. (1980)
139	Compositae	*Launaea mucronata (Forssk.) Muschl.*	Fl. Iranica 122. (1977)
140	Compositae	*Malcolmia africana. Crucoiferae*	Fl. Iranica 139A . (1979)
141	Compositae	*Matricaria chamomilla.*	
142	Compositae	*Matricaria sp*	
143	Compositae	*Neurada procumbens L.*	
144	Compositae	*Notobasis syriaca (L.) Cass.*	Fl. Iranica 139A . (1979)
145	Compositae	*Onopordum heteracanthum C.A.Mey.*	Fl. Iranica 139A . (1979)
146	Compositae	*Onopordum sp.*	
147	Compositae	*Picnomon acarna (L.) Cass*	Fl. Iranica 139A . (1979)
148	Compositae	*Picris strigosa M.Bieb.*	Fl. Iranica 122. (1977)
149	Compositae	*Punica granatum L.*	Fl Iraq 4, 1. (1980)
150	Compositae	*Rhagadiolus stellatus (L.) Gaertn.*	Fl. Iranica 122. (1977)
151	Compositae	*Salicornia europaea.*	
152	Compositae	*Salix euphratica.*	
153	Compositae	*Scorzonera bulbipes Boiss. & Hausskn.*	Fl. Iranica 122. (1977)
154	Compositae	*Scorzonera L.*	
155	Compositae	*Scorzonera sp*	
156	Compositae	*Senecio sp.*	
157	Compositae	*Senecio vulgaris L.*	Fl Iranica 145. (1980)
158	Compositae	*Serratula cerinthifolia (SM.) Boiss.*	Fl Iranica 139b. (1980)
159	Compositae	*Serratula grandifolia P. H. Davis*	Fl Iranica 139b. (1980)
160	Compositae	*Serratula sp.*	
161	Compositae	*Sherardia arvensis L.*	Fl Iraq 4, 1. (1980)
162	Compositae	*Silybum marianum (L.) Gaertn.*	Fl. Iranica 139A . (1979)
163	Compositae	*Sonchus L.*	
164	Compositae	*Taraxacum sp.*	
165	Compositae	*Tragopogon longirostris Bisch.ex Sch.-Bip.*	Fl. Iranica 122. (1977)
166	Compositae	*Tragopogon sp.*	

#	Family	Scientific Name	Citations
167	Compositae	*Xeranthemum cylindraceum Sibth. & Sm.*	Fl. Iranica 139A . (1979)
168	Compositae	*Xeranthemum longepaposum*	
169	Compositae	*Zoegea leptaurea L.*	Fl Iranica 139b. (1980)
170	Convolvulaceae	*Anthemis deserti.*	Fl Iranica 2. (1963)
171	Convolvulaceae	*Convolvulus arvensis L.*	Fl Iranica 2. (1963)
172	Convolvulaceae	*Convolvulus sp.*	
173	Convolvulaceae	*Nigella arvensis L.*	Fl Iranica 2. (1963)
174	Crassulaceae	*Rosularia sempervivum (M.B.) Berger in Engler & Prantl*	Fl Iranica 72. (1970)
175	Crassulaceae	*Sedum L.*	
176	Crassulaceae	*Sedum sp*	
177	Crassulaceae	*Umbilicus intermedius Boiss.*	Fl Iranica 72. (1970)
178	Crassulaceae	*Umbilicus tropaeolifolius Boiss.*	Fl Iranica 72. (1970)
179	Cruciferae	*Aethionema carneum (Banks & Soland.) B. Fedtsch.*	Fl Iraq 4, 2. (1980)
180	Cruciferae	*Aethionema froedinii Rech.f.*	Fl Iraq 4, 2. (1980)
181	Cruciferae	*Aethionema grandiflorum Boiss. & Hohen.*	Fl Iraq 4, 2. (1980)
182	Cruciferae	*Alliaria petiolata (M. Bieb.) Cavara & Grande*	Fl Iraq 4, 2. (1980)
183	Cruciferae	*Alyssum menicoides Boiss.*	Fl Iraq 4, 2. (1980)
184	Cruciferae	*Alyssum sp.*	
185	Cruciferae	*Alyssum stapfi Vierh.*	Fl Iraq 4, 2. (1980)
186	Cruciferae	*Alyssum strictum Willd.*	Fl Iraq 4, 2. (1980)
187	Cruciferae	*Arabis caucasica Willd.*	Fl Iraq 4, 2. (1980)
188	Cruciferae	*Arabis L.*	
189	Cruciferae	*Astragalus annularis Forssk.*	
190	Cruciferae	*Aubretia parviflora Boiss.*	Fl Iraq 4, 2. (1980)
191	Cruciferae	*Barbarea plantaginea DC.*	Fl Iraq 4, 2. (1980)
192	Cruciferae	*Barbarea R.Br.*	
193	Cruciferae	*Biscutella didyma L.*	Fl Iraq 4, 2. (1980)
194	Cruciferae	*Brassica nigra (L.) W.D.J. Koch*	Fl Iraq 4, 2. (1980)
195	Cruciferae	*Brassica sp.*	
196	Cruciferae	*Bryonia multiflora Boiss. & Heldr. In Boiss.*	Fl Iraq 4, 1. (1980)
197	Cruciferae	*Calendula arvensis.*	
198	Cruciferae	*Capsella bursa-pastoris (L.) Medic.*	Fl Iraq 4, 2. (1980)
199	Cruciferae	*Cardaria draba (L.) Desv.*	Fl Iraq 4, 2. (1980)
200	Cruciferae	*Cladium mariscus (L.) Pohl*	
201	Cruciferae	*Clypeola jonthlaspi L.*	Fl Iraq 4, 2. (1980)
202	Cruciferae	*Clypeola L.*	
203	Cruciferae	*Cruciferae*	
204	Cruciferae	*Descurainia sophia (L.) Webb & Berth.*	Fl Iraq 4, 2. (1980)
205	Cruciferae	*Eruca sativa Mill.*	Fl Iraq 4, 2. (1980)
206	Cruciferae	*Erysimum repandum L.*	Fl Iraq 4, 2. (1980)
207	Cruciferae	*Erysimum sp.*	
208	Cruciferae	*Fibigia clypeata (L.) Medic.*	Fl Iraq 4, 2. (1980)
209	Cruciferae	*Fibigia macrocarps.*	
210	Cruciferae	*Fibigia multicaulis (Boiss. & Hohen.) Boiss.*	Fl Iraq 4, 2. (1980)
211	Cruciferae	*Fibigia sp.*	
212	Cruciferae	*Fibigia suffruticosa (Vent.) Sweet*	Fl Iraq 4, 2. (1980)
213	Cruciferae	*Hirschfeldia incana (L.) Lag.-Foss.*	Fl Iraq 4, 2. (1980)
214	Cruciferae	*Isatis cappadocica Desv.*	Fl Iraq 4, 2. (1980)
215	Cruciferae	*Isatis cochlearis Boiss.*	Fl Iraq 4, 2. (1980)
216	Cruciferae	*Isatis L.*	
217	Cruciferae	*Isatis lusitanica L.*	Fl Iraq 4, 2. (1980)
218	Cruciferae	*Ledidium L.*	
219	Cruciferae	*Leptaleum filifolium (Willd.) DC.*	Fl Iraq 4, 2. (1980)
220	Cruciferae	*Lycium barbarum. Solanaceae*	
221	Cruciferae	*Matthiola incana (L.) R. Br.*	Fl Iraq 4, 2. (1980)
222	Cruciferae	*Nasturtium officinale R.Br.*	Fl Iraq 4, 2. (1980)

#	Family	Scientific Name	Citations
223	Cruciferae	*Neslia apiculata Fisch., C.A. Mey. & Ave-Lall.*	Fl Iraq 4, 2. (1980)
224	Cruciferae	*Paronychia arabica (L.) DC..*	Fl Iraq 4, 2. (1980)
225	Cruciferae	*Sameraria Desv.*	
226	Cruciferae	*Sinapis arvensis L.*	Fl Iraq 4, 2. (1980)
227	Cruciferae	*Sisymbrium septulatum DC.*	Fl Iraq 4, 2. (1980)
228	Cruciferae	*Thlaspi perfoliatum L.*	Fl Iraq 4, 2. (1980)
229	Cruciferae	*Thlaspi sp.*	
230	Cruciferae.	*Microthalspi perfoliatum.*	
231	Crucoiferae	*Malcolmia africana.*	
232	Cucurbitaceae	*Pulicaria undulata (L.) Lack*	Fl Iraq 4, 1. (1980)
233	Cupressaceae	*Cuscuta approximata Babingt.*	Fl Iranica 8. (1964)
234	Cupressaceae	*Juniperus oxycedrus L.*	Fl Iraq 2. (1966)
235	Cuscutacea	*Cuscuta sp*	
236	Cuscutacea	*Cyperaceae*	
237	Cyperaceae	*Carex sp*	
238	Cyperaceae	*Kickxia Blume*	Fl Iraq 8. (1985)
239	Cyperaceae	*Potamogeton lucens L.*	Fl Iraq 8. (1985)
240	Cyperaceae	*Schoenoplectus litoralis (Schrad.) Palla*	Fl Iraq 8. (1985)
241	Cyperaceae	*Scirpoides holoschoenus (L.) Sojak*	Fl Iraq 8. (1985)
242	Cyperaceae	*Sclerocephalus arabicus.*	Fl Iraq 8. (1985)
243	Cyperaceae	*Tribulus macropterus Boiss.*	Fl Iraq 8. (1985)
244	Datiscaceae	*Tamus communis L.*	Fl Iraq 8. (1985)
245	Dioscoreaceae	*Cephalaria dichaetophora Boiss.*	Fl Iranica 168. (1991)
246	Dipsacaceae	*Cephalaria syriaca (L.) Roemer & Schultes*	Fl Iranica 168. (1991)
247	Dipsacaceae	*Pterocephalus plumulosus (L.) Coult.*	Fl Iranica 168. (1991)
248	Dipsacaceae	*Scabiosa palastina.*	
249	Equisetaceae	*Equisetum ramossissimum Desf.*	Fl Iraq 2. (1966)
250	Euphorbiaceae	*Euphorbia condylocarpa M. Bieb.*	Fl Iraq 4, 1. (1980)
251	Euphorbiaceae	*Euphorbia denticulata Lam.*	Fl Iraq 4, 1. (1980)
252	Euphorbiaceae	*Euphorbia macroclada Boiss.*	Fl Iraq 4, 1. (1980)
253	Euphorbiaceae	*Euphorbia sp*	
254	Fabaceae	*Alhagi maurorum*	
255	Fagaceae	*Quercus aegilops L.*	Fl Iraq 4, 1. (1980)
256	Fagaceae	*Quercus aegilops subsp. persica (Jaub. & Spach) Blakelock*	Fl Iraq 4, 1. (1980)
257	Fagaceae	*Quercus infectoria Oliv.*	Fl Iraq 4, 1. (1980)
258	Fagaceae	*Quercus libani Oliv.*	Fl Iraq 4, 1. (1980)
259	Fagaceae	*Quercus macranthera Fisch. & C.A. Mey. Ex Hohen.*	Fl Iraq 4, 1. (1980)
260	Frankeniaceae	*Frankenia pulverulenta L.*	Fl Iraq 4, 1. (1980)
261	Fumariaceae	*Corydalis rutifolia (Sm.) DC.*	Fl Iraq 4, 2. (1980)
262	Fumariaceae	*Fumaria densiflora DC.*	Fl Iraq 4, 2. (1980)
263	Gentianaceae	*Biebersteinia multifida DC*	Fl Iranica 69. (1970)
264	Gentianaceae	*Centaurium tenuiflorum.*	
265	Gentianaceae	*Gentiana olivieri Griseb.*	Fl Iranica 41. (1967)
266	Geraniaceae	*Atriplex leucoclada Boiss.*	
267	Geraniaceae	*Erodium sp*	
268	Geraniaceae	*Geranium lucidum L.*	Fl Iranica 69. (1970)
269	Geraniaceae	*Geranium tuberosum L.*	Fl Iranica 69. (1970)
270	Geraniaceae	*Geranium sp*	
271	Globulariaceae	*Gramineae*	
272	Graminae	*Aegilops sp*	
273	Gramineae	*Aegilops columnaris Zhuk.*	Fl Iraq 9. (1968)
274	Gramineae	*Aegilops crassa Boiss.*	Fl Iraq 9. (1968)
275	Gramineae	*Aegilops umbellulata Zhuk.*	Fl Iraq 9. (1968)
276	Gramineae	*Aeluropus lagapoides (L.) Trin.*	Fl Iraq 9. (1968)
277	Gramineae	*Aizoon hispanicum L.*	Fl Iraq 9. (1968)
278	Gramineae	*Arundo donax L.*	Fl Iraq 9. (1968)

#	Family	Scientific Name	Citations
279	Gramineae	*Astragalus hauarensis Boiss.*	Fl Iraq 9. (1968)
280	Gramineae	*Astragalus schimperi Boiss.*	Fl Iraq 9. (1968)
281	Gramineae	*Avena fatua L.*	Fl Iraq 9. (1968)
282	Gramineae	*Bacopa monniera (L.) Hayata & Matsum.*	Fl Iraq 9. (1968)
283	Gramineae	*Briza humilis M. Bieb.*	Fl Iraq 9. (1968)
284	Gramineae	*Briza minor L.*	Fl Iraq 9. (1968)
285	Gramineae	*Bromus brachystachys Horn.*	Fl Iraq 9. (1968)
286	Gramineae	*Bromus danthoniae Trin.*	Fl Iraq 9. (1968)
287	Gramineae	*Bromus diandrus Roth.*	Fl Iraq 9. (1968)
288	Gramineae	*Bromus sp*	
289	Gramineae	*Chenopodiaceae Vent.*	Fl Iraq 9. (1968)
290	Gramineae	*Chenopodium L.*	Fl Iraq 9. (1968)
291	Gramineae	*Chrozophora tinctoria (L.) Raf.*	Fl Iraq 9. (1968)
292	Gramineae	*Cynodon dactylon (L.) Pers.*	Fl Iraq 9. (1968)
293	Gramineae	*Echinaria capitata (L.) Desf.*	Fl Iraq 9. (1968)
294	Gramineae	*Haloxylon salicornicum Chenopodiaceae*	Fl Iraq 9. (1968)
295	Gramineae	*Heteranthelium piliferum (Banks & Soland.) Hochst.*	Fl Iraq 9. (1968)
296	Gramineae	*Hordeum bulbosum L.*	Fl Iraq 9. (1968)
297	Gramineae	*Hordeum glaucum Steud.*	Fl Iraq 9. (1968)
298	Gramineae	*Hordeum sp.*	
299	Gramineae	*Imperata cylindrica (L.) P. Beauv.*	Fl Iraq 9. (1968)
300	Gramineae	*Launaea capitata (Spreng.) Dandy*	Fl Iraq 9. (1968)
301	Gramineae	*Ledidium aucheri Boiss.*	Fl Iraq 9. (1968)
302	Gramineae	*Lolium L.*	
303	Gramineae	*Lolium rigidum Gaud.*	Fl Iraq 9. (1968)
304	Gramineae	*Lolium sp*	
305	Gramineae	*Lolium temulentum L.*	Fl Iraq 9. (1968)
306	Gramineae	*Peganum harmala L.*	Fl Iraq 9. (1968)
307	Gramineae	*Phalaris L.*	
308	Gramineae	*Phleum exaratum Griseb.*	Fl Iraq 9. (1968)
309	Gramineae	*Phragmites australis (Cav.) Trin. Ex Steud.*	Fl Iraq 9. (1968)
310	Gramineae	*Plantago boissieri Hausskn. & Bornm.*	Fl Iraq 9. (1968)
311	Gramineae	*Poa bulbosa L.*	Fl Iraq 9. (1968)
312	Gramineae	*Potamogeton perfoliatus L.*	Fl Iraq 9. (1968)
313	Gramineae	*Rhanterium epapposum.*	Fl Iraq 9. (1968)
314	Gramineae	*Rumex cyprius Murb.*	Fl Iraq 9. (1968)
315	Gramineae	*Sorghum bicolor (L.) Moench.*	Fl Iraq 9. (1968)
316	Gramineae	*Stipagrostis plumosa (L.) Munro ex T. Anders.*	Fl Iraq 9. (1968)
317	Gramineae	*Taeniatherum asperum (Simonkai) Nevski*	Fl Iraq 9. (1968)
318	Gramineae	*Taeniatherum crinitum (Schreb.) Nevski*	Fl Iraq 9. (1968)
319	Gramineae	*Triticum L.*	
320	Haloragaceae	*Ranunculus aquatica.*	
321	Helleboraceae	*Delphinium L.*	
322	Helleboraceae	*Eranthis hyemalis (L.) Salisb.*	Fl Iraq 4, 2. (1980)
323	Hydrocharitaceae	*Hypericum L.*	
324	Hypericaceae	*Hypericum triquetrifolium Turra*	Fl Iraq 4, 1. (1980)
325	Hypericaceae	*Hypericum vermiculare Boiss. & Hausskn.*	Fl Iraq 4, 1. (1980)
326	Iridaceae	*Gladiolus atroviolaceus Boiss.*	Fl Iraq 8. (1985)
327	Iridaceae	*Gladiolus italicus Mill.*	Fl Iraq 8. (1985)
328	Iridaceae	*Iris aucheri (Bak.) Sealy*	Fl Iraq 8. (1985)
329	Iridaceae	*Iris barnumae Bak. & Foster*	Fl Iraq 8. (1985)
330	Iridaceae	*Iris germanica L.*	Fl Iraq 8. (1985)
331	Iridaceae	*Iris reticulata M. Bieb.*	Fl Iraq 8. (1985)
332	Juglandaceae	*Juglans regia*	Fl Iraq 4, 1. (1980)
333	Juncaceae	*Juncaceae*	
334	Juncaceae	*Juncus hybridus Brot.*	Fl Iraq 8. (1985)

#	Family	Scientific Name	Citations
335	Juncaceae	*Juncus rigidus Desf.*	Fl Iraq 8. (1985)
336	Juncaceae	*Juncus sp.*	
337	Juncaceae	*Scabiosa L.*	Fl Iraq 8. (1985)
338	Juncaginaceae	*Labiatae A.L. De Jussieu*	
339	Labiatae	*Ajuga chia.*	
340	Labiatae	*Ajuga L.*	
341	Labiatae	*Cakile arabica Bel. & Bornm.*	Fl Iraq 8. (1985)
342	Labiatae	*Eremostachys laciniata.*	
343	Labiatae	*Eremostachys sp.*	
344	Labiatae	*Lamium amplexicaule L.*	Fl Iranica 150. (1982)
345	Labiatae	*Lamium L.*	
346	Labiatae	*Lamium striatum.*	
347	Labiatae	*Marrubium L.*	
348	Labiatae	*Mentha L.*	
349	Labiatae	*Mentha longifolia (L.) Hudson*	Fl Iranica 150. (1982)
350	Labiatae	*Phlomis L.*	
351	Labiatae	*Phlomis olivieri Benth.*	Fl Iranica 150. (1982)
352	Labiatae	*Salvia indica L.*	Fl Iranica 150. (1982)
353	Labiatae	*Salvia L.*	
354	Labiatae	*Salvia macrosiphon Boiss.*	Fl Iranica 150. (1982)
355	Labiatae	*Salvia multicaulis Vahl*	Fl Iranica 150. (1982)
356	Labiatae	*Salvia palaestina Benth.*	Fl Iranica 150. (1982)
357	Labiatae	*Salvia sp*	
358	Labiatae	*Stachys byzantina*	
359	Labiatae	*Stachys L.*	
360	Labiatae	*Stachys lavandulifolia Vahl*	Fl Iranica 150. (1982)
361	Labiatae	*Teucrium L.*	
362	Labiatae	*Teucrium polium L.*	Fl Iranica 150. (1982)
363	Labiatae	*Thymbra spicata L.*	Fl Iranica 150. (1982)
364	Labiatae	*Thymus L.*	
365	Labiatae	*Thymus syriacus Boiss.*	Fl Iranica 150. (1982)
366	Labiatae	*Thymus syriacus Boiss. var. syriacus*	Fl Iranica 150. (1982)
367	Labiatae	*Ziziphora capitata L.*	Fl Iranica 150. (1982)
368	Lamiaceae	*Salvia spinosa L.*	
369	Leguminosae	*Trifolium sp*	
370	Lemnaceae	*Bongardia chrysopogon (L.) Spach*	Fl Iraq 4, 2. (1980)
371	Lemnaceae	*Savignya parviflora (Del.) Webb.*	Fl Iraq 8. (1985)
372	Leonticaceae	*Allium L.*	
373	Leonticaceae	*Leontice leontopetalum L.*	Fl Iraq 4, 2. (1980)
374	Leonticaceae	*Liliaceae*	
375	Leonticaceae	*Zizphus mauritiana Lam.*	
376	Liliacae	*Allium nigrum.*	
377	Liliaceae	*Allium chryantherum Boiss. & Reut. Ex Boiss.*	Fl Iraq 8. (1985)
378	Liliaceae	*Asparagus L.*	
379	Liliaceae	*Bellavalia sp*	
380	Liliaceae	*Cochicum kotschyi Boiss.*	Fl Iraq 8. (1985)
381	Liliaceae	*Cochicum L.*	
382	Liliaceae	*Eremurus spectabilis M. Bieb.*	Fl Iraq 8. (1985)
383	Liliaceae	*Fritillaria crassifolia Boiss. & Huet*	Fl Iraq 8. (1985)
384	Liliaceae	*Fritillaria imperialis L.*	Fl Iraq 8. (1985)
385	Liliaceae	*Fritillaria L.*	
386	Liliaceae	*Gagea sp.*	
387	Liliaceae	*Muscari comosum (L.) Mill.*	Fl Iraq 8. (1985)
388	Liliaceae	*Muscari sp.*	
389	Liliaceae	*Narcissus tazetta.*	
390	Liliaceae	*Ornithogalum brachysachyus C. Koch*	Fl Iraq 8. (1985)

#	Family	Scientific Name	Citations
391	Liliaceae	*Ornithogalum iraqense Feinbrun*	Fl Iraq 8. (1985)
392	Liliaceae	*Ornithogalum persicum Haussk*n. *Ex Bornm.*	Fl Iraq 8. (1985)
393	Liliaceae	*Ornithogalum sp.*	
394	Liliaceae	*Puschkinia scilloides Adams*	Fl Iraq 8. (1985)
395	Liliaceae	*Scilla L.*	
396	Liliaceae	*Tulipa kurdica Agnew & Hadac ex Wendelbo*	Fl Iraq 8. (1985)
397	Liliaceae	*Tulipa systola Stapf*	Fl Iraq 8. (1985)
398	Linaceae	*Linum mucronatum Bertol.*	Fl Iraq 4, 1. (1980)
399	Linaceae	*Linum nodiflorum L.*	Fl Iraq 4, 1. (1980)
400	Linaceae	*Linum strictum L.*	Fl Iraq 4, 1. (1980)
401	Linaceae	*Linum sulphureum.*	
402	Linaceae	*Linum velutinum Steud. Ex Planch.*	Fl Iraq 4, 1. (1980)
403	Malvaceae	*Alcea kurdica (Schlecht) Alef.*	Fl Iraq 4, 1. (1980)
404	Malvaceae	*Alcea L.*	
405	Malvaceae	*Althaea L.*	
406	Malvaceae	*Bassia eriophora (Schrad.) Aschers. In Schweinf.*	Fl Iraq 4, 1. (1980)
407	Malvaceae	*Malva aegyptia L.*	Fl Iraq 4, 1. (1980)
408	Malvaceae	*Malva L.*	
409	Malvaceae	*Malva parviflora L.*	Fl Iraq 4, 1. (1980)
410	Marsileaceae	*Matricaria aurea (Loefl.) Schultz Bip.*	Fl Iranica 158. (1986)
411	Moraceae	*Ficus carica L.*	Fl Iraq 4, 1. (1980)
412	Moraceae	*Ficus carica var. rupestris Haussk*n. *Ex Boiss.*	Fl Iraq 4, 1. (1980)
413	Myrtaceae	*Eucalyptus torquata Luehm*	Fl Iraq 4, 1. (1980)
414	Najadaceae	*Calligonum tetrapterum Jaub. & Spach*	Fl Iraq 8. (1985)
415	Najadaceae	*Suaeda vermiculata Chenopodiaceae*	Fl Iraq 8. (1985)
416	Oleaceae	*Fraxinus angustifolia Vahl*	Fl Iraq 4, 1. (1980)
417	Oleaceae	*Fraxinus syriaca Boiss.*	Fl Iraq 4, 1. (1980)
418	Onagraceae	*Anacamptis pyramidalis (L.) L.C. Rich.*	Fl Iraq 8. (1985)
419	Onagraceae	*Orchidaceae*	
420	Orchidaceae	*Cephalanthera kurdica Bornm. Ex Kraenzl.*	Fl Iraq 8. (1985)
421	Orchidaceae	*Dactylorhiza umbrosa (Kar. & Kir.) Nevski*	Fl Iraq 8. (1985)
422	Orchidaceae	*Dactylorhiza umbrosa (Kar. & Kir.) Nevski var. umbrosa*	Fl Iraq 8. (1985)
423	Orchidaceae	*Epipactis veratrifolia Boiss. & Hoh.*	Fl Iraq 8. (1985)
424	Orchidaceae	*Himantoglossum hircinum (L.) W.D.J. Koch*	Fl Iraq 8. (1985)
425	Orchidaceae	*Himantoglossum hircinum var. affine (Boiss.) J.J. Wood*	Fl Iraq 8. (1985)
426	Orchidaceae	*Himantoglossum hircinum var. pseudocaprinum J.J. Wood*	Fl Iraq 8. (1985)
427	Orchidaceae	*Ophrys bornmuelleri M. Schulze ex Bornm.*	Fl Iraq 8. (1985)
428	Orchidaceae	*Ophrys L.*	
429	Orchidaceae	*Orchis anatolica Boiss.*	Fl Iraq 8. (1985)
430	Orchidaceae	*Orchis collina Banks & Soland.*	Fl Iraq 8. (1985)
431	Orchidaceae	*Orchis coriophora L.*	Fl Iraq 8. (1985)
432	Orchidaceae	*Orchis sp*	
433	Orobanchaceae	*Orobanche aegyptiaca Pers.*	Fl Iranica 5. (1964)
434	Orobanchaceae	*Orobanche L.*	
435	Orobanchaceae	*Orobanche ramosa L.*	Fl Iranica 5. (1964)
436	Orobanchiaceae	*Phelypaea coccinea.*	
437	Papaveraceae	*Alhagi Adans.*	
438	Papaveraceae	*Papaver fugax Poir.*	Fl Iraq 4, 2. (1980)
439	Papaveraceae	*Papaver macrostomum Boiss. & Huet*	Fl Iraq 4, 2. (1980)
440	Papaveraceae	*Papaver rhoeas L.*	Fl Iraq 4, 2. (1980)
441	Papaveraceae	*Papaver somniferum L.*	Fl Iraq 4, 2. (1980)
442	Papaveraceae	*Papaver sp.*	
443	Papilionaceae	*Alhagi graecorum Boiss.*	Fl Iraq 3. (1974)
444	Papilionaceae	*Anagyris foetida L.*	Fl Iraq 3. (1974)
445	Papilionaceae	*Astragalus hamosus L.*	Fl Iraq 3. (1974)
446	Papilionaceae	*Astragalus sp.*	

#	Family	Scientific Name	Citations
447	Papilionaceae	*Astragalus spinosus (Forssk.) Muschl.*	Fl Iraq 3. (1974)
448	Papilionaceae	*Cicer bijugum Rech.f.*	Fl Iraq 3. (1974)
449	Papilionaceae	*Cistanche tubulosa (Schenk) R. Wight*	
450	Papilionaceae	*Colutea cilicica Boiss. & Bal.*	Fl Iraq 3. (1974)
451	Papilionaceae	*Coronilla scorpioides (L.) W.D.J. Koch*	Fl Iraq 3. (1974)
452	Papilionaceae	*Fagonia bruguieri DC.*	
453	Papilionaceae	*Hedysarum L.*	
454	Papilionaceae	*Hippocrepis unisiliquosa L.*	Fl Iraq 3. (1974)
455	Papilionaceae	*Hymenocarpos circinnatus (L.) Savi*	Fl Iraq 3. (1974)
456	Papilionaceae	*Lathryus aphaca L.*	Fl Iraq 3. (1974)
457	Papilionaceae	*Lathryus boissieri Sirj.*	Fl Iraq 3. (1974)
458	Papilionaceae	*Lathryus L.*	
459	Papilionaceae	*Lathryus sativus L.*	Fl Iraq 3. (1974)
460	Papilionaceae	*Lens orientalis (Boiss.) Handl.-Mazz.*	Fl Iraq 3. (1974)
461	Papilionaceae	*Medicago constricta Dur.*	Fl Iraq 3. (1974)
462	Papilionaceae	*Medicago coronata (L.) Bartal.*	Fl Iraq 3. (1974)
463	Papilionaceae	*Medicago L.*	
464	Papilionaceae	*Medicago laciniata (L.) Mill.*	Fl Iraq 3. (1974)
465	Papilionaceae	*Medicago orbicularis (L.) Bartal.*	Fl Iraq 3. (1974)
466	Papilionaceae	*Medicago rigidula (L.) All.*	Fl Iraq 3. (1974)
467	Papilionaceae	*Meliotus indica (L.) All.*	Fl Iraq 3. (1974)
468	Papilionaceae	*Onobrychis Mill.*	
469	Papilionaceae	*Parentucella latifolia (L.) Caruel*	Fl Iranica 147. (1981)
470	Papilionaceae	*Pisum formosum (Stev.) Alef.*	Fl Iraq 3. (1974)
471	Papilionaceae	*Pisum sp.*	
472	Papilionaceae	*Prosopis juliflora (Sw.) DC*	Fl Iraq 3. (1974)
473	Papilionaceae	*Scorpiurus L.*	
474	Papilionaceae	*Scorpiurus muricatus var. subvillosus (L.) Lam.*	Fl Iraq 3. (1974)
475	Papilionaceae	*Suaeda fruticusa.*	
476	Papilionaceae	*Trifolium campestre Schreb. In Sturm*	Fl Iraq 3. (1974)
477	Papilionaceae	*Trifolium dasyurum Presl.*	Fl Iraq 3. (1974)
478	Papilionaceae	*Trifolium pauciflorum.*	
479	Papilionaceae	*Trifolium purpureum Lois.*	Fl Iraq 3. (1974)
480	Papilionaceae	*Trifolium repens L.*	Fl Iraq 3. (1974)
481	Papilionaceae	*Trifolium spumosum L.*	Fl Iraq 3. (1974)
482	Papilionaceae	*Trifolium stellatum L.*	Fl Iraq 3. (1974)
483	Papilionaceae	*Trifolium tomentosum L.*	Fl Iraq 3. (1974)
484	Papilionaceae	*Trigonella L.*	
485	Papilionaceae	*Trigonella spruneriana Boiss.*	Fl Iraq 3. (1974)
486	Papilionaceae	*Vicia hyaeniscyamus.*	
487	Papilionaceae	*Vicia sativa L.*	Fl Iraq 3. (1974)
488	Papilionaceae	*Vicia sp.*	
489	Papilionaceae	*Vicia tenuifolia Roth.*	Fl Iraq 3. (1974)
490	Papilionaceae	*Vicia villosa Roth.*	Fl Iraq 3. (1974)
491	Papilonaceae	*Phoenx dactylifera L.*	
492	Parnassiaceae	*Paronychia kurdica Boiss.*	Fl Iranica 144. (1980); Zohary Fl Iraq. (1950)
493	Pedaliaceae	*Pedicularis caucasica M.B.*	Fl Iranica 147. (1981)
494	Periplocaceae	*Phagnalon rupestre (L.) DC.*	Fl Iranica 145. (1980)
495	Pinaceae	*Pinus halepensis Mill.*	Fl Iraq 2. (1966)
496	Pinaceae	*Pinus halepensis Mill. var. prutia .*	
497	Pittosporaceae	*Plantago L.*	
498	Plantaginaceae	*Plantago lanceolata L.*	Fl Iranica 15. (1965)
499	Plantaginaceae	*Platanus orientalis L.*	Fl Iraq 4, 1. (1980)
500	Plantaginaceae	*Senecio glaucus L.*	Fl Iranica 15. (1965)
501	Platanaceae	*Acantholimon sp.*	Fl Iranica 108. (1974)
502	Plumbaginaceae	*Acantholimon astragalinum Mobayen*	Fl Iranica 108. (1974)

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503	Polygalaceae	*Dendrostellera lessertii (Wilkstr.) van Tiegh.*	
504	Polygalaceae	*Malcolmia grandiflora. Cruciferae*	
505	Polygalaceae	*Polygonaceae Juss.*	
506	Polygonaceae	*Cyperus L.*	Fl Iranica 56. (1968)
507	Polygonaceae	*Polygonum sp.*	
508	Polygonaceae	*Rheum ribes L.*	Fl Iranica 56. (1968)
509	Polygonaceae	*Rumex crispus L.*	Fl Iranica 56. (1968)
510	Polygonaceae	*Rumex ribes.*	
511	Polygonaceae	*Rumex sp.*	
512	Polygonaceae	*Tamarix aphylla (L.) Karsten*	Fl Iranica 56. (1968)
513	Polygonidaceae	*Rumex chalepensis.*	
514	Potamogetonaceae	*Anagallis arvensis L.*	Fl Iranica 9. (1965)
515	Potamogetonaceae	*Centaurea ammocyanus Boiss.*	Fl Iraq 8. (1985)
516	Potamogetonaceae	*Ceratophllum demersum L.*	Fl Iraq 8. (1985)
517	Potamogetonaceae	*Citrullus colocynthis (L.) Schrad.*	Fl Iraq 8. (1985)
518	Potamogetonaceae	*Cressa cretica L.*	Fl Iraq 8. (1985)
519	Potamogetonaceae	*Hydrilla verticilata*	Fl Iraq 8. (1985)
520	Potamogetonaceae	*Lemna gibba L.*	Fl Iraq 8. (1985)
521	Potamogetonaceae	*Melilotus indicus.*	Fl Iraq 8. (1985)
522	Potamogetonaceae	*Mesembryanthemum nodiflorum L.*	Fl Iraq 8. (1985)
523	Potamogetonaceae	*Myriophyllum verticilatum*	Fl Iraq 8. (1985)
524	Potamogetonaceae	*Potamogeton pectinatus L.*	Fl Iraq 8. (1985)
525	Potamogetonaceae	*Salvinia natans (L.) All.*	Fl Iraq 8. (1985)
526	Potamogetonaceae	*Suaeda sp.*	Fl Iraq 8. (1985)
527	Potamogetonaceae	*Torularia torulosa (Desf.) O. E. Schulz*	Fl Iraq 8. (1985)
528	Primulaceae	*Dionysia odora Fenzl*	Fl Iranica 9. (1965)
529	Rafflesiaceae	*Ranunculaceae*	
530	Ranunculaceae	*Adonis annua L.*	Fl Iraq 4, 2. (1980)
531	Ranunculaceae	*Adonis microcarpa DC.*	Fl Iraq 4, 2. (1980)
532	Ranunculaceae	*Anenome coronaria L.*	Fl Iraq 4, 2. (1980)
533	Ranunculaceae	*Anenome L.*	
534	Ranunculaceae	*Cyperus rotundus L.*	
535	Ranunculaceae	*Ranunculus arvensis L.*	Fl Iraq 4, 2. (1980)
536	Ranunculaceae	*Ranunculus aucheri Boiss.*	Fl Iraq 4, 2. (1980)
537	Ranunculaceae	*Ranunculus sp.*	
538	Ranunculaceae	*Thalictrum sultanabadense Stapf*	Fl Iraq 4, 2. (1980)
539	Rhamnaceae	*Paliurus spina-christi Mill.*	Fl Iraq 4, 1. (1980)
540	Rhamnaceae	*Zizphus jujuba Mill.*	Fl Iraq 4, 1. (1980)
541	Rosaceae	*Asperula L.*	
542	Rosaceae	*Crataegus azorolus L.*	Fl Iraq 2. (1966)
543	Rosaceae	*Crataegus L.*	
544	Rosaceae	*Geum urbanum L.*	Fl Iraq 2. (1966)
545	Rosaceae	*Prunus amygdalus Batsch.*	Fl Iraq 2. (1966)
546	Rosaceae	*Prunus arabica (Oliv.) Meickle*	Fl Iraq 2. (1966)
547	Rosaceae	*Prunus kotschyi (Boiss. & Hohen.) Meickle*	Fl Iraq 2. (1966)
548	Rosaceae	*Prunus microcarpa*	
549	Rosaceae	*Prunus microcarpa C.A.Mey.*	Fl Iraq 2. (1966)
550	Rosaceae	*Prunus orientalis*	
551	Rosaceae	*Prunus sp*	
552	Rosaceae	*Pyrus sp.*	
553	Rosaceae	*Pyrus syriaca Boiss.*	Fl Iraq 2. (1966)
554	Rosaceae	*Rosa canina L.*	Fl Iraq 2. (1966)
555	Rosaceae	*Rosa canina L. var. canina*	Fl Iraq 2. (1966)
556	Rosaceae	*Rubiaceae Ehrendorfer & Schoenbeck-Temesy*	
557	Rosaceae	*Rubus sanctus Schreb.*	Fl Iraq 2. (1966)
558	Rosaceae	*Sanguisorba minor*	

#	Family	Scientific Name	Citations
559	Rosaceae	*Zilla spinosa (Turra) Prantl*	Fl Iraq 2. (1966)
560	Rubiaceae	*Aethionema R.Br.*	
561	Rubiaceae	*Asperula arvensis L.*	Fl Iraq 4, 1. (1980)
562	Rubiaceae	*Callipeltis cucullaris (L.) Rothm.*	Fl Iraq 4, 1. (1980)
563	Rubiaceae	*Cruciata Mill.*	
564	Rubiaceae	*Cruciata taurica (Pall. Ex Willd.) Ehrend.*	Fl Iraq 4, 1. (1980)
565	Rubiaceae	*Galium L.*	
566	Rubiaceae	*Galium pestalozzae.*	
567	Rubiaceae	*Galium setaceum Lam.*	Fl Iraq 4, 1. (1980)
568	Rubiaceae	*Galium sp*	
569	Rubiaceae	*Galium verum L.*	Fl Iraq 4, 1. (1980)
570	Rutaceae	*Populus alba L.*	Fl Iraq 4, 1. (1980)
571	Rutaceae	*Suaeda maritima.*	Fl Iraq 4, 1. (1980)
572	Salicaceae	*Populus euphratica Oliv.*	Fl Iraq 4, 1. (1980)
573	Salicaceae	*Salix acmophylla Boiss.*	Fl Iraq 4, 1. (1980)
574	Salicaceae	*Salix babylonica L.*	Fl Iraq 4, 1. (1980)
575	Salicaceae	*Sclerocephalus arabicus. Caryophyllaceae*	Fl Iraq 4, 1. (1980)
576	Salixaceae	*Alkanna hirsutissima (Bertol.) A. DC..*	
577	Salviniaceae	*Juncus acutus L.*	Fl Iraq 2. (1966)
578	Salviniaceae	*Phyla canescens (Kunth.) Greene*	Fl Iraq 2. (1966)
579	Scrophulariaceae	*Cardus sp*	
580	Scrophulariaceae	*Pedicularis L.*	
581	Scrophulariaceae	*Salsola L.*	Fl Iranica 147. (1981); Zohary Fl Iraq. (1950)
582	Scrophulariaceae	*Scrophularia deserti Del.*	Fl Iranica 147. (1981); Zohary Fl Iraq. (1950)
583	Scrophulariaceae	*Scrophularia L.*	
584	Scrophulariaceae	*Scrophulariaceae Juss.*	
585	Scrophulariaceae	*Verbascum L.*	
586	Scrophulariaceae	*Verbascum macrocaropum Boiss.*	Zohary Fl Iraq. (1950)
587	Scrophulariaceae	*Verbascum sp*	
588	Scrophulariaceae	*Veronica anagalis-aquatica L.*	Fl Iranica 147. (1981)
589	Scrophulariaceae	*Veronica persica Poir.*	Fl Iranica 147. (1981)
590	Scrophulariaceae	*Veronica sp.*	
591	Solanaceae	*Hyoscyamus reticulatus L.*	Fl Iranica 100. (1972)
592	Tamaricaceae	*Convolvulus cephalopodus Convolvulaceae*	Fl Iraq 4, 1. (1980)
593	Tamaricaceae	*Haloxylon salicornicum.*	
594	Tamaricaceae	*Helianthemum kahircum Del.*	Fl Iraq 4, 1. (1980)
595	Tamaricaceae	*Nitraria retusa (Forrsk.) Aschers.*	
596	Tamaricaceae	*Seidlitzia rosmarinus Ehrenb. Ex Boiss.*	Fl Iraq 4, 1. (1980)
597	Tamaricaceae	*Tamarix aucherana (Decne ex Walp.) Baum*	Fl Iraq 4, 1. (1980)
598	Tamaricaceae	*Tamarix brachystachys Bunge*	Fl Iraq 4, 1. (1980)
599	Tamaricaceae	*Tamarix sp.*	
600	Tamaricaceae	*Zizphus nummularia (Brum.f.) Wight & Arn.*	
601	Typhaceae	*Cynachum acutum L.*	Fl Iraq 8. (1985)
602	Typhaceae	*Potamogeton crispus L.*	Fl Iraq 8. (1985)
603	Typhaceae	*Tamaricaceae*	Fl Iraq 8. (1985)
604	Typhaceae	*Typha domingensis Pers.*	Fl Iraq 8. (1985)
605	Ulmaceae	*Umbelliferae A.L. De Jussieu*	
606	Umbellifera	*Torilis sp.*	
607	Umbelliferae	*Ammi majus L.*	Fl. Iranica 162. (1987)
608	Umbelliferae	*Artedia squamata L.*	Fl. Iranica 162. (1987)
609	Umbelliferae	*Daucus L.*	
610	Umbelliferae	*Eryngium creticum Lam.*	Fl. Iranica 162. (1987)
611	Umbelliferae	*Eryngium L.*	
612	Umbelliferae	*Ferula L.*	
613	Umbelliferae	*Ferulago angulata (Schlect.) Boiss.*	Fl. Iranica 162. (1987)

#	Family	Scientific Name	Citations
614	Umbelliferae	*Ferulago angulata (Schlect.) Boiss. subsp. angulata*	Fl. Iranica 162. (1987)
615	Umbelliferae	*Lagoecia cuminoides L.*	Fl. Iranica 162. (1987)
616	Umbelliferae	*Malabaila secacul (Miller) Boiss. subsp. secacul*	Fl. Iranica 162. (1987)
617	Umbelliferae	*Parietaria L.*	
618	Umbelliferae	*Prangos ferulacea (L.) Lindl.*	Fl. Iranica 162. (1987)
619	Umbelliferae	*Scandix L.*	
620	Umbelliferae	*Scandix pecten-veneris L.*	Fl. Iranica 162. (1987)
621	Umbelliferae	*Smyrnium cordifolium Boiss.*	Fl. Iranica 162. (1987)
622	Umbelliferae	*Torilis leptocarpa (Hochst.) Townsend*	Fl. Iranica 162. (1987)
623	Umbelliferae	*Torilis leptophylla (L.) Reichenbach*	Fl. Iranica 162. (1987)
624	Umbelliferae	*Torilis nodosa (L.)*	Fl. Iranica 162. (1987)
625	Umbelliferae	*Turgenia latifolia (L.) Hoffm.*	Fl. Iranica 162. (1987)
626	Umpliferae	*Prangos acaulis*	
627	Urticaceae	*Urtica pilulifera L.*	Fl Iraq 4, 1. (1980)
628	Urticaceae	*Urtica urens L.*	Fl Iraq 4, 1. (1980)
629	Valerianaceae	*Valeriana discoridis.*	
630	Valerianaceae	*Valerianella sp*	
631	Valerianaceae	*Valerianella vesicaria (L.) Moench*	Fl Iranica 62. (1969)
632	Verbenaceae	*Cornulaca aucheri Moq.*	Fl Iraq 4, 2. (1980)
633	Verbenaceae	*Phyla nodiflora (L.) Greene*	Fl Iraq 4, 2. (1980)
634	Verbenaceae	*Vitex L.*	
635	Verbenaceae	*Vitex pseudo-negunda (Haussnk. Ex Bornm.) Hand.-Mazz.*	Fl Iraq 4, 2. (1980)
636	Verbenaceae	*Zygophyllum fabago L.*	Fl Iraq 4, 2. (1980)
637	Violaceae	*Viola modesta Fenzl*	Fl Iraq 4, 1. (1980)
638	Vitaceae	*Vitis sp.*	
639	Vitaceae	*Vitis vinifera L.*	Fl Iraq 4, 1. (1980)
640	Zannichelliaceae	*Chenopodium murale L.*	Fl Iraq 4, 1. (1980)
641	Zannichelliaceae	*Salicornia herbacea Chenopodiaceae*	Fl Iraq 4, 1. (1980)
642	Zygophyllaceae	*Carthamus L.*	Fl Iraq 4, 1. (1980)
643	Zygophyllaceae	*Fagonia indica*	
644	Zygophyllaceae	*Rumex vesicarius L.*	Fl Iraq 4, 1. (1980)

Annex C: Mammals & other fauna

List of mammals and other fauna seen during 2010 KBA in Iraqi Kurdistan:

Order	Common Name	Latin Name	Conservation Status
Rodentia	Persian squirrel	*Sciurus anomalus*	LC
Artiodactyla	Wild goats	*Capra aegagrus*	VU
Testudines	Spur-thighed tortoise	*Testudo graeca*	VU
Squamata	European green lizard	*Lacerta viridis*	LC
Squamata	Yellow-headed (rock) agama	*Laudakia nupta*	LC
Squamata	Horn-scaled agama	*Trapelus ruderatus*	
Squamata	European legless lizard	*Ophisaurus apodus*	
Squamata	Dwarf racer snake	*Eirenis* sp.	
Squamata	Lined dwarf racer	*Eirenis decemlineata*	
Squamata	Blunt-nosed viper	*Macrovipera lebetina*	CITES Appendix II
Squamata	Coin-marked snake	*Hemorrhois nummifer*	
Squamata	Schneider's skink	*Eumeces schneideri*	
Caudata	Urmia newt	*Neurergus crocatus*	VU
Anura	Lemon-yellow tree frog	*Hyla savignyi*	LC
Lepidoptera	Dingy skipper	*Erynnis tages*	
Lepidoptera	Green-striped white	*Euchloe belemia*	
Lepidoptera	Southern grayling	*Hipparchia aristaeus*	LC
Lepidoptera	Eastern rock grayling	*Hipparchia syriaca*	
Lepidoptera	White-edged rock brown	*Hipparchia parisatis*	
Lepidoptera	Oriental meadow brown	*Hyponephele lupina*	
Lepidoptera	Sardinian small tortoiseshell	*Aglais urticae*	LC
Lepidoptera	Silver-washed fritillary	*Argynnis paphia*	
Lepidoptera	Mountain small white	*Artogeia ergane*	
Lepidoptera	Danube clouded yellow	*Colias myrmidone*	
Lepidoptera	Painted lady (cosmopolitan)	*Vanessa cardui*	
Lepidoptera	Eastern festoon	*Zerynthia (Allancastria) cerisyi*	
Lepidoptera	Purple hairstreak	*Quercusia quercus*	
Lepidoptera	Zephyr blue	*Plebejus pylaon*	
Lepidoptera	Southern grizzled skipper	*Pyrgus malvae*	LC
Lepidoptera	Northern wall brown	*Lassiomata petropolitana*	
Lepidoptera	Southern white admiral	*Limenitis reducta*	
Lepidoptera	Glanville fritillary	*Melitaea cinxia*	
Lepidoptera	Old world swallowtail	*Papilio machaon*	
Lepidoptera	Lattice brown	*Kirinia roxelana*	
Scorpiones	Central Asian scorpion	*Orthochirus scrobiculosus*	

List of mammals and other fauna seen in local animal zoos in Iraq in 2010

Sulaimani Governorate:

Order	Common Name	Latin Name	Conservation Status
Carnivora	Domestic cat	*Felis catus*	
Carnivora	African lion	*Panthera leo*	VU
Carnivora	Red fox	*Vulpes vulpes*	LC
Carnivora	Gray wolf	*Canis lupus*	LC
Artiodactyla	Goitered gazelle (jaziry ghazal)	*Gazella subgutturosa*	VU
Artiodactyla	Domestic goat	*Capra aegagrus hircus*	
Carnivora	Brown bear	*Ursus arctose*	LC

Order	Common Name	Latin Name	Conservation Status
Primates	Indian & African monkey	Unknown	
Crocodylia	Crocodile	*Crocodylus* sp.	

Erbil Governorate:

Order	Common Name	Latin Name	Conservation Status
Artiodactyla	Goitered gazelle (jaziry ghazal)	*Gazella subgutturosa*	VU
Artiodactyla	Domestic goat	*Capra aegagrus hircus*	
Carnivora	Domestic dog	*Canis lupus familiaris*	
Carnivora	Red fox	*Vulpes vulpes*	LC
Carnivora	Gray wolf	*Canis lupus*	LC
Carnivora	Jungle cat	*Felis chaus*	LC
Carnivora	African lion	*Panthera leo*	VU
Carnivora	Brown bear	*Ursus arctose*	LC
Artiodactyla	Dormedary camel	*Camelus dromedarius*	
Primates	Indian and African monkeys	Unknown	
Crocodylia	Crocodile	*Crocodylus* sp.	

Dohuk Governorate:

Order	Common Name	Latin Name	Conservation Status
Rodentia	Persian squirrel	*Sciurus anomalus*	LC
Artiodactyla	Goitered gazelle (jaziry ghazal)	*Gazella subgutturosa*	VU
Carnivora	Striped Hyena	*Hyaena hyaena*	NT
Carnivora	African lion	*Panthera leo*	VU
Carnivora	Brown bear	*Ursus arctose*	LC
Carnivora	Gray wolf	*Canis lupus*	LC
Carnivora	Domestic dog	*Canis lupus familiaris*	
Erinaceomorpha	Indian crested porcupine	*Hystrix indica*	LC
Lagomorpha	Domestic rabbit	*Oryctolagus cuniculus*	
Primates	Indian and African monkeys	Unknown	
Crocodylia	Crocodile	*Crocodylus* sp.	
	Python snake	Unknown	

List of mammals and other fauna seen in local animal markets in 2010

Sulaimani Governorate:

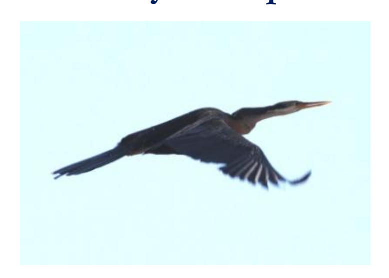
Order	Common Name	Latin Name	Conservation Status
Lagomorpha	Domestic rabbit	*Oryctolagus cuniculus*	
Carnivora	Fox cub	*Vulpes vulpes*	LC
Erinaceomorpha	Eastern European hedgehog	*Erinaceus concolor*	LC
Rodentia	Persian squirrel	*Sciurus anomalus*	LC

Erbil Governorate:

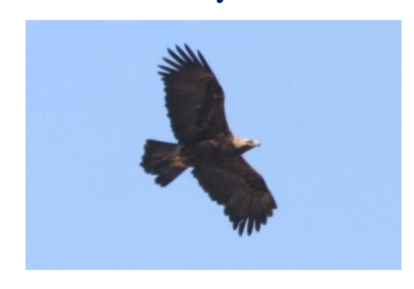
Order	Common Name	Latin Name	Conservation Status
Primates	Monkey	Unknown	
Rodentia	Persian squirrel	*Sciurus anomalus*	LC

Annex D: Images from the survey work

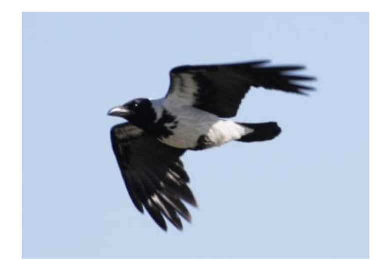
Some key bird species seen in the surveys of 2010



African Darter *Anhinga rufa* in Hawizeh (HZ)



Eastern Imperial Eagle *Aquila heliaca* in Hammar (HA)



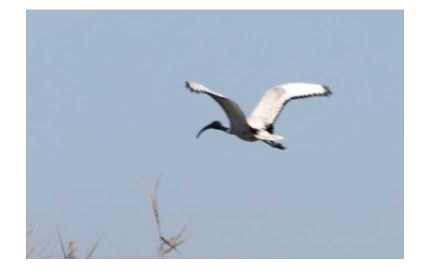
Mesopotamian Crow *Corvus capellanus* in the Central Marshes (CM)



Dalmatian Pelicans *Pelecanus crispus* in Fao (SA)



White Pelicans *Pelecanus onocrotalus* in Hammar (HA)



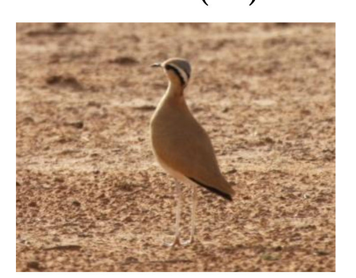
African Sacred Ibis *Threskiornis aethiopicus* in Hammar (HA)



Desert Finch *Rhodospiza obsoletus* in Teeb Oasis (MN1)



Dead Sea Sparrows *Passer moabiticus* in Zichri (CM5)



Cream-colored Coarser *Cursorius cursor* in Dalmaj (ME10,11,12)









Steppe Buzzard *Buteo buteo vulpinus* - at Qadissiya or Haditha Dam (AN7)

Montagu's Harrier *Circus pygargus* - at Tharthaar Lake & Dhebaeji Field (SD2)

Peregrine Falcon *Falco peregrines brooki* – carried by Omar Fadhil, breeding race in Iraq







Eurasian Hoopoe *Upupa epops* - at Tharthar Lake, Western Edge (AN9)

Greater Hoopoe-Lark *Alaemon alaudipes* - at Tharthar Lake, Western Edge (AN9)

Little Bittern *Ixobrychus minutes* - an adult male carring a Barbus sp. at Anah & Rawa (AN3)







Desert Wheatear *Oenanthe deserti* at Tharthaar Lake & Dhebaeji Field (SD2)

Tawny Pipit *Anthus campestris* adult photographed at Haditha Wetlands & Baghdadi (AN2)

Trumpeter Finch *Bucanetes githagineus* pair were observed in the foothills near Himreen Lake (near DY1)







Red-throated Pipit *Anthus cervinus* – group of migrants observed at Jallet Albu Ageel (SD5)

Red-backed Shrike *Lanius collurio* – adult male observed at Mahzam (AN3)

Woodchat Shrike *Lanius senator* – an adult male observd at Mahzam (AN3)



Corncrake *Crex crex* - a migrant adult bird photographed at Tharthar Lake, Western Edge (AN9)



European Roller *Coracias garrulous* – Breeding Adult at Jallet Albu Ageel (SD5)



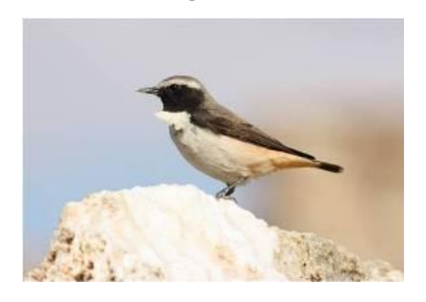
Egyptian Vulture *Neophron percnopterus* – pair was observed at Huweija Marshes & Beagi (KK1)



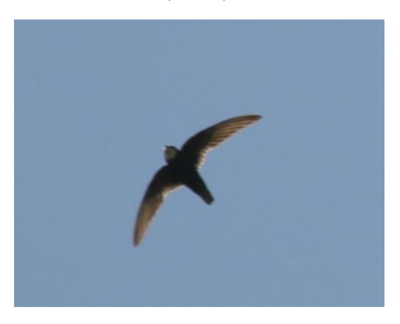
Lesser Kestrel *Falco naumanni* – A resting adult male at Hawijat Albu Dheab and Al Ramadi Marshes (AN8)



Eastern Imperial Eagle *Aquila heliaca* – Juvenile migrant at Tharthar Lake, Western Edge (AN9)



Kurdistan Wheatear *Oenanthe xanthoprymna* – at foothills near Himreen lake (DY1)



Apus affinis - at Dukan (S2)



Buteo b. vulpinus – at Hazarmerd (S34)



Chroicocephalus ridibundus – at Dukan (S2)



Sitta tephronota – at Chami Razan (S10)



Falco naumani – at Homer Qawm and Shadala Valley (S24)

A variety of vertebrates species have been observed during winter and summer surveys in Iraq 2010



Spur-thighed tortoise *Testudo graeca* - at Haji Omran Mountain (E1)



Rüppell's Fox *Vulpes rueppelli* - from Wadi Al-W'eir (NJ1)



Muddskippers *Periophthalmus* sp - in Khor Az Zubayr (KZ5), South KBA



Female wild boar *Sus scrofa* and piglets - in the Central marshes (CM sites)



Spiny-tailed Lizard *Uromastix aegyptius* – carried by Omar Fadhil at Tharthar Lake, Western Edge



Nupta Agama *Agama nupta* – During courtship near the burrow – Jallet Albu Ageel (SD5)

(AN9*)*





Indian Grey Mangoose *Herpestes eduardsii* –at Jadriyah and Umm Al Khanazeer Island (BG1)

Long-eared Hedgehog *Hemiechinus auritus* – A fresh speciement was collected in Jadriyah and Umm Al Khanazeer Island (BG1)





Golden Jackal *Canis aureus* – Photographed near the Tigris bank at Abu Dalaf & Shari Depression (SD4)

Goitered Gazelle *Gazella subgutturosa* – At Al - Massad Reserve, Rutba (AN12)

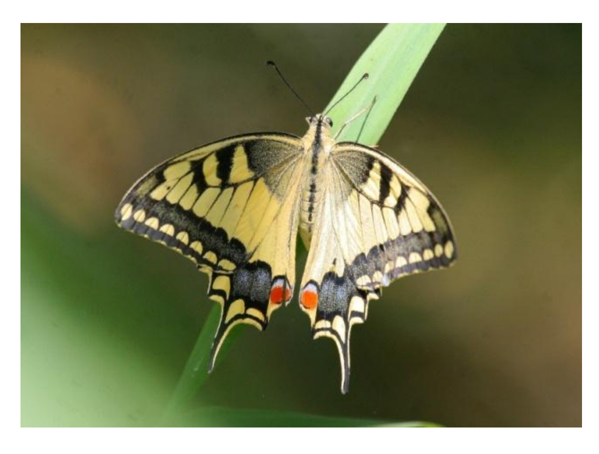




Persian squirrel *Sciurus anomalus* - in Erbil Animal

Tessellated Water Snake *Natrix t. tessellate* - total

Market	**count of 400 individuals. Al-Gazel local market in Baghdad collected the animals mainly from the wetlands of Kut governorate.**



Papilio machaon **– Hazarmerd (S34)**



Neurergus crocatus **– Doli Smaquly (D5A)**



Trapelus ruderatus **- at Peramagroon (S6)**



Macrovipera lebetina **- at Parazan (S26)**



Laudakia nupta **- at Peramagroon (S6)**

Common and Important Plant Species seen in the KBA 2010 Surveys in southern and Northern Iraq



Astragallus spinosus at South Suwibaat (TQ1)



Convolvulus cephalopodus at Lehais (BR4)



Peganum harmala, at Teeb oasis (MN1)



Rhazya stricta at Wadi Al W'eir (NJ1)



Nymphoides indica at Abu Zirib (CM16)



Salix babylonica, a rare plant found at Dukan (S2)



Quercus macranthera, a rare plant found at Assos Mt, South face (S32B)



Quercus infectoria at Ser Amadia (D2A)



Tulipa kurdica at Sakran Mt (E14)



Iris germanica, rare, Awesar (S4B)



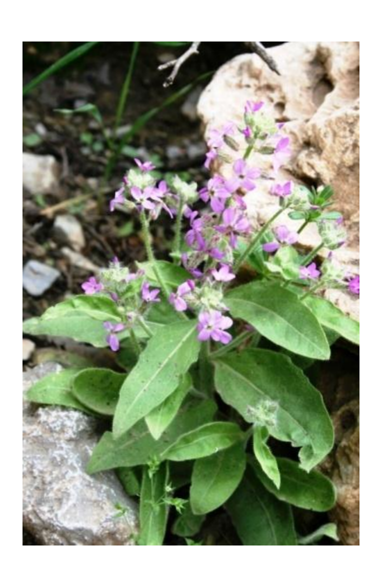
Iris barnumae, rare and endemic to the region at Hagi Omran (E1)



Fritillaria imperialis at Sakran Mt-Choman Reserve (E14)



Himantoglossum hircinum subsp. *Hircinum* at Ser Amadia (D2A)



Hesperis kurdica, regional endemic, Assos Mt. South face (S32B)



Anacamptis pyramidalis,very rare in Iraq, Ser Amadia (D2A)



Himantoglossum hircinum subsp. affine, regional endemic, Ser Amadia (D2A)



Cephalanthera kurdica, regional endemic, at Awesar (S4B)



Ajuga tridactylites, rare, at Ser Amadia (D2A)



Hesperis straussii, rare, Assos Mt. South face (S32B)



Dionysia odora, rare, regional endemic, Peramagroon, (S6)



Cicer bijugum, **very rare in Iraq, Mosul Lake (D10)**



Michauxia nuda, **rare, Doli Smaquly (E5A)**



Gladiolus atroviolaceae, **rare near the upper margin of the sub alpine and moist steppe zone, but occasional in the forest zone, Homer Qawm and Shadala Valley (S24)**

Annex E: The 2010 KBA sites with their ecoregion, area, the KBA, IBA & IPA Criteria that they may meet and their percentage area of their respective ecoregion, as well as EVP prioritization

(*note*: shaded criteria information indicates specific criteria that were not assessed)

				KBA (non-bird)						IBA							IPA				0.2	0.2	0.1	0.2	0.15	0.05	0.1	1	1
Governate	**Site Name**	**Site Code**	**Area (ha)**	**V**	**Ia**	**Ib**	**Ic**	**Id**	**Ie**	**A1**	**A2**	**A3**	**A4i**	**A4 ii**	**A4 iii**	**A4 iv**	**A**	**B**	**C**	% of Ecoregion	KBA (non-bird)	IBA	IBA Potential	HVR	PA	TEC	HT	EVP	EVP Avg.
Zagros Mountains Forest Steppe (PA0446)																													
Dohuk	Dure	D16	2732									*						*	*	0.09%			0.1	0.2				0.3	0.3
Dohuk	Chamanke	D18	166									*						*	*	0.01%			0.1	0.2				0.3	0.3
Dohuk	Ser Amadia	D2A	2582							*		*						*	*	0.08%		0.2		0.2				0.4	0.4
Dohuk	Garagu	D5	107									*						*	*	0.004%			0.1	0.2				0.3	0.3
Erbil	Haji Omran Mountain	E1	3310									*						*	*	0.11%			0.1	0.2		0.05		0.35	0.35
Erbil	Bahraka	E11	3000																*	0.10%								0	0
Erbil	Sakran Mt-Choman Reserve	E14	5740									*						*	*	0.19%	0.2		0.1	0.2		0.05		0.77	0.55
Erbil	Bradost Mountain	E18	1246	*						*		*						*	*	0.04%	0.2	0.2		0.2				0.6	0.6
Erbil	Doli (Valley) Smaquly	E5A	7027							*		*						*	*	0.23%		0.2		0.2				0.4	0.4
Erbil	Barzan	E8	4708	*								*						*	*	0.15%	0.2		0.1	0.2	0.15	0.05		0.7	0.7
Sulaimani	Darbandikhan Lake and Surrounded Area	S1	43861	*								*								1.44%	0.2		0.1					0.3	0.3
Sulaimani	Chami Razan	S10	4906							*		*						*	*	0.16%		0.2		0.2				0.4	0.4
Sulaimani	Qara Dagh	S11	31105	*						*		*						*	*	1.02%	0.2	0.2		0.2			0.1	0.7	0.7
Sulaimani	Dukan Lake and Surrounding Area	S2	47281							*		*	*					*	*	1.55%		0.2		0.2				0.4	0.4
Sulaimani	Maidan Area	S22	57448									*								1.89%			0.1					0.1	0.1
Sulaimani	De Lezha	S23	8110							*		*						*	*	0.27%		0.2		0.2				0.4	0.4
Sulaimani	Homer Qawm and Shadala Valley (w Peramagroon Mt)	S24	10028	*						*		*						*	*	0.33%	0.2	0.2		0.2			0.1	0.7	0.7
Sulaimani	Parazan	S26	2287	*						*		*						*	*	0.08%	0.2	0.2		0.2				0.6	0.6

				KBA (non-bird)						IBA							IPA				0.2	0.2	0.1	0.2	0.15	0.05	0.1	1	1
Governate	**Site Name**	**Site Code**	**Area (ha)**	**V**	**Ia**	**Ib**	**Ic**	**Id**	**Ie**	**A1**	**A2**	**A3**	**A4i**	**A4 ii**	**A4 iii**	**A4 iv**	**A**	**B**	**C**	% of Ecoregion	KBA (non-bird)	IBA	IBA Potential	HVR	PA	TEC	HT	EVP	EVP Avg.
Sulaimani	Qadr Karam	S30	?									*											0.1					0.1	0.1
Sulaimani	Assos Mountain	S32A & B	12010	*								*						*	*	0.39%	0.2		0.1	0.2				0.5	0.5
Sulaimani	Gmo Mountain	S33	667									*						*	*	0.02%			0.1	0.2				0.3	0.3
Sulaimani	Hazarmerd	S34	608							*		*							*	0.02%		0.2						0.2	0.2
Sulaimani	Ahmed Awa	S4A	646							*		*							*	0.02%		0.2				0.05	0.1	0.35	0.35
Sulaimani	Awesar	S4B	84									*						*	*	0.00%			0.1	0.2		0.05	0.1	0.45	0.45
Sulaimani	Peramagroon (w Homer Qawm & Shadala Valley)	S6	10028	*						*		*						*	*	0.33%	0.2	0.2		0.2				0.6	0.6
Sulaimani	Sargalu	S7	3028							*		*							*	0.10%		0.2						0.2	0.2
Middle East Steppe (PA0812)																													
Dohuk	Mosul lake	D10	48128							*		*						*	*	1.27%		0.2		0.2			0.1	0.5	0.5
Erbil	AltunKopri	E3	1575								*	*	*						*	0.04%		0.2						0.2	0.2
Tigris-Euphrates alluvial salt marsh (PA0906)																													
Basrah	Kteibaan	BR2	2978																	0.10%				-		0.05		0.05	0.05
Basrah & Thi Qar	Baghdadiya, South (part of Central marshes)	CM1	131780	*						*	*	*	*		*				*	4.37%	0.2	0.2			0.15			0.55	0.475
	Fuhood, North (part of Central marshes)	CM10										*											0.1	-	0.15			0.25	
	Abu Zirig (part of Central marshes)	CM16		*						*	*	*						*	*		0.2	0.2		0.2	0.15			0.75	
	Zichri (part of Central marshes)	CM5									*	*		*								0.2		-	0.15			0.35	
ThiQar	Teena, Northern (part of West Hammar)	HA1	136326								*	*								4.52%		0.2		-			0.1	0.3	0.23
ThiQar	Buhaira Al Hilwa (part of West Hammar)	HA3																	*				-					0	

				KBA (non-bird)						IBA							IPA				0.2	0.2	0.1	0.2	0.15	0.05	0.1	1	1
Governate	**Site Name**	**Site Code**	**Area (ha)**	**V**	**Ia**	**Ib**	**Ic**	**Id**	**Ie**	**A1**	**A2**	**A3**	**A4i**	**A4 ii**	**A4 iii**	**A4 iv**	**A**	**B**	**C**	% of Ecoregion	KBA (non-bird)	IBA	IBA Potential	HVR	PA	TEC	HT	EVP	EVP Avg.
ThiQar	Umm At-Tiyaar near Al Buhaira (part of West Hammar)	HA4								*	*	*										0.2		-				0.2	
ThiQar	Umm Nakhla (part of West Hammar)	HA6										*											0.1	-			0.1	0.2	
ThiQar	Kermashiya Marsh (part of West Hammar)	HA8								*	*	*							*			0.2					0.1	0.3	
ThiQar	Haffaar Opening 2 (part of West Hammar)	HA19										*										0.2		-				0.2	
ThiQar	Abu Hedeeda (part of West Hammar)	HA22										*											0.1	-				0.1	
ThiQar	Abu-'Ajaj (part of West Hammar)	HA23		*						*	*	*									0.2	0.2		-				0.4	
ThiQar	Nuwashi (part of West Hammar)	HA24								*	*	*	*									0.2		-				0.2	
ThiQar	Al-Rashid Lake (part of West Hammar)	HA25								*	*	*							*			0.2					0.1	0.3	
ThiQar	Abu-Ajaj, East (part of West Hammar)	HA27										*											0.1	-				0.1	
ThiQar	Ghabishiya (part of West Hammar)	HA28																					-					0	
Basrah	Naggaara (part of East Hammar)	HA16	82968	*							*	*							*	2.75%	0.2	0.2						0.4	0.275
Basrah	Shilaychiya Marsh (part of East Hammar)	HA17									*	*	*						*			0.2						0.2	

				KBA (non-bird)						IBA							IPA				0.2	0.2	0.1	0.2	0.15	0.05	0.1	1	1
Governate	Site Name	Site Code	Area (ha)	V	Ia	Ib	Ic	Id	Ie	A1	A2	A3	A4i	A4 ii	A4 iii	A4 iv	A	B	C	% of Ecoregion	KBA (non-bird)	IBA	IBA Potential	HVR	PA	TEC	HT	EVP	EVP Avg.
Basrah	Slein (south Rumaila) (part of East Hammar)	HA21								*	*	*							*			0.2					0.1	0.3	
Basrah	Shaafi (part of East Hammar)	HA26								*	*	*	*									0.2		-				0.2	
Missan	Umm An Ni'aaj (part of Hawizeh marshes)	HZ1		*							*	*	*						*		0.2	0.2			0.15	0.05		0.6	
Missan	Udhaim (part of Hawizeh marshes)	HZ2								*	*	*	*						*			0.2			0.15	0.05		0.4	
Missan	E'jayrda (part of Hawizeh marshes)	HZ4	164028																*	5.44%				-	0.15	0.05	0.1	0.3	0.4
Basrah	Majnoon (part of Hawizeh marshes)	HZ8																	*						0.15	0.05	0.1	0.3	
Missan	Bushes near Umm Al Warid (part of Hawizeh marshes)	HZ9																*	*				-	0.2	0.15	0.05		0.4	
Babylon	Hindiya Barrage	ME7	278								*	*								0.01%		0.2		-			0.1	0.3	0.3
Basrah	Euphrates & Tigris Junction	SA1	?	*								*							*		0.2		0.1					0.3	0.3
Missan	Sinnaaf Area, Western	SM5	26049							*	*									0.86%		0.2		-				0.2	0.2
Wasit	Shuweicha Marsh	SM7	?																					-				0	0
Missan	Teeb	SM8	14827							*	*	*	*						*	0.49%		0.2		-				0.2	0.2
Eastern Mediterranean conifer-sclerophyllous-broadleaf forest (PA1207)																													
Dohuk	Fishkhaboor	D11	4179									*								3.45%			0.1					0.1	0.1
Arabian Desert and East Sahero-Arabian Xeric Shrublands (PA1303)																													
Anbar	Habbaniya Lake	AN1	45390							*		*								0.23%		0.2						0.2	0.2
Baghdad	Jadriyah and Umm Al	BG1	1	*							*	*								0.00001%	0.2	0.2					0.1	0.5	0.5

				KBA (non-bird)						IBA							IPA				0.2	0.2	0.1	0.2	0.15	0.05	0.1	1	1
Governate	**Site Name**	**Site Code**	**Area (ha)**	**V**	**Ia**	**Ib**	**Ic**	**Id**	**Ie**	**A1**	**A2**	**A3**	**A4i**	**A4 ii**	**A4 iii**	**A4 iv**	**A**	**B**	**C**	% of Ecoregion	KBA (non-bird)	IBA	IBA Potential	HVR	PA	TEC	HT	EVP	EVP Avg.
	Khanazeer Island																												
Basrah	Kharanij	BR3	28737									*						*	*	0.15%			0.1	0.2				0.3	0.3
Basrah	Lehais	BR4	?															*	*					0.2				0.2	0.2
Karbala	Al-Taar	KR1	Part of ME5																*				-					0	0
Karbala	'Ein Al-Tamr	KR2	Part of ME5																*				-					0	0
Qadissiya & Wassit	Dalmaj Marsh, South (part of Dalmaj marsh)	ME10	92076	*						*	*	*							*	0.47%	0.2	0.2					0.1	0.5	0.5
	Dalmaj Marsh, East (part of Dalmaj marsh)	ME11		*						*	*	*									0.2	0.2		-			0.1	0.5	
	Dalmaj Marsh, North (part of Dalmaj marsh)	ME12		*						*	*	*	*								0.2	0.2		-			0.1	0.5	
Qadissiya	Basroogiya	ME13	?															*	*				-	0.2				0.2	0.2
Babil	Ibn Najm	ME4	4000									*								0.02%			0.1	-			0.1	0.2	0.2
Karbala	Razzaza Lake	ME5	156234							*	*	*							*	0.81%		0.2					0.1	0.3	0.3
Babil	North Ibn Najm	ME8	1789									*								0.01%			0.1	-			0.1	0.2	0.2
Muthanna	Sawa Lake	MT1	20058							*	*	*							*	0.10%		0.2						0.2	0.2
Muthanna	Salman	MT3	14895									*								0.08%			0.1	-				0.1	0.1
Najaf	Wadi Al-W'eir	NJ1	5040								*	*						*	*	0.03%		0.2		0.2				0.4	0.4
Najaf	Sh'eeb Abu-Talha	NJ2	10593							*		*								0.05%		0.2		-				0.2	0.2
Thi Qar	Suwaibaat, South	TQ1	?																*				0.1					0.1	0.1
Thi Qar	Tell Al-Laham	TQ2	?															*	*				-	0.2				0.2	0.2
Mesopotamian Shrub Desert (PA1320)																													
Anbar	Rahaliya and Razzaza Lake	AN10	97800							*		*								0.75%		0.2						0.2	0.2

				KBA (non-bird)						IBA							IPA				0.2	0.2	0.1	0.2	0.15	0.05	0.1	1	1
Governate	**Site Name**	**Site Code**	**Area (ha)**	**V**	**Ia**	**Ib**	**Ic**	**Id**	**Ie**	**A1**	**A2**	**A3**	**A4i**	**A4 ii**	**A4 iii**	**A4 iv**	**A**	**B**	**C**	% of Ecoregion	KBA (non-bird)	IBA	IBA Potential	HVR	PA	TEC	HT	EVP	EVP Avg.
Anbar	Sabkhat Albu Garis	AN11	9819									*								0.08%			0.1					0.1	0.1
Anbar	Rutba and Al Massad Gazelles Reserve	AN12	600	*							*	*								0.005%	0.2							0.2	0.2
Anbar	Haditha Wetlands & Baghdadi	AN2	5800								*									0.04%		0.2						0.2	0.2
Anbar	Anah & Rawa	AN3	17961							*	*	*								0.14%		0.2						0.2	0.2
Anbar	Al Nekheab District Oases - Al Hussayniyah	AN4	?							*		*										0.2						0.2	0.2
	Gasr Muhaiwir	AN6	1268									*								0.01%			0.1					0.1	0.1
	Qadissiya or Haditha Dam	AN7	145230							*		*								1.12%		0.2						0.2	0.2
Anbar	Hawijat Albu Dheab and Al Ramadi Marshes	AN8	74019							*	*	*								0.57%		0.2						0.2	0.2
Anbar	Tharthar Lake, Western Edge	AN9	340600									*								2.62%		0.2	-					0.2	0.2
Diyala	Himreen lake	DY1	28766								*	*								0.22%		0.2	-					0.2	0.2
Diyala	Attariya Plains	DY3	15455								*	*								0.12%		0.2						0.2	0.2
Diyala	Mandli	DY4	4890									*								0.04%			0.1					0.1	0.1
Kirkuk	Huweija Marshes & Beagi	KK1	74019							*		*								0.57%		0.2						0.2	0.2
Salah Ad Din	Samarra dam & Wetlands	SD1	4470																	0.03%			-					0	0
Salah Ad Din	Tharthaar Lake & Dhebaeji Field	SD2	340600	*						*		*								2.62%	0.2	0.2						0.4	0.4
Salah Ad Din	Mahzam	SD3	14757								*	*								0.11%		0.2						0.2	0.2
Salah Ad Din	Abu Dalaf & Shari	SD4	32776								*	*								0.25%		0.2						0.2	0.2

				KBA (non-bird)						IBA							IPA				0.2	0.2	0.1	0.2	0.15	0.05	0.1	1	1
Governate	**Site Name**	**Site Code**	**Area (ha)**	**V**	**Ia**	**Ib**	**Ic**	**Id**	**Ie**	**A1**	**A2**	**A3**	**A4i**	**A4 ii**	**A4 iii**	**A4 iv**	**A**	**B**	**C**	% of Ecoregion	KBA (non-bird)	IBA	IBA Potential	HVR	PA	TEC	HT	EVP	EVP Avg.
	Depression																												
Salah Ad Din	Jallet Albu Ageel	SD5	16000							*	*	*								0.12%		0.2						0.2	0.2
Wasit	Jazman (Zurbatia)	WT1	155095								*									1.19%		0.2				0.05		0.25	0.25
Persian Gulf desert and semi-desert (PA1323)																													
Basrah	Jabal Senam	BR1	2918															*	*	2.62%				0.2		0.05		0.25	0.25
South Iran Nubo-Sindian desert and semi-desert (PA1328)																													
Basrah	Khor Az Zubayr Canal-100 meters east (part of Khor Az Zubayr)	KZ3	31854																	3.72%				-			0.1	0.1	0.15
	Khor Az Zubayr (part of Khor Az Zubayr)	KZ4																	*				-				0.1	0.1	
	Khor Az Zubayr, west (part of Khor Az Zubayr)	KZ5																						-			0.1	0.1	
	Umm Qasr Port (part of Khor Az Zubayr)	KZ6																*	*				-	0.2			0.1	0.3	
Missan	Teeb oasis (with Zubaidaat - MN2)	MN1	28578							*	*	*							*	3.34%		0.2				0.05		0.25	0.325
Missan	Zubaidaat (with Teeb oasis -MN1)	MN2										*						*	*				0.15	0.2		0.05		0.4	
Basrah	Ras Al-Beesha (Fao)	SA4	16909									*							*	1.98%			0.15			0.05		0.2	0.2

